COLOR ADDITIVES

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HEARINGS

BEFORE THE

COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE HOUSE OF REPRESENTATIVES

EIGHTY-SIXTH CONGRESS

SECOND SESSION

ON

H.R. 7624

A BILL TO PROTECT THE PUBLIC HEALTH BY AMENDING THE FEDERAL FOOD, DRUG, AND COSMETIC ACT SO AS TO AUTHORIZE THE USE OF SUITABLE COLOR ADDITIVES IN OR ON FOODS, DRUGS, AND COSMETICS, IN ACCORDANCE WITH REGULATIONS PRESCRIBING THE CONDITIONS (INCLUDING MAXIMUM TOLERANCES) UNDER WHICH SUCH ADDITIVES MAY BE SAFELY USED

S. 2197

AN ACT TO PROTECT THE PUBLIC HEALTH BY AMENDING THE FEDERAL FOOD, DRUG, AND COSMETIC ACT SO AS TO AUTHORIZE THE USE OF SUITABLE COLOR ADDITIVES IN OR ON FOODS, DRUGS, AND COSMETICS, IN ACCORDANCE WITH REGULATIONS PRESCRIBING THE CONDITIONS (INCLUDING MAXIMUM TOLERANCES) UNDER WHICH SUCH ADDITIVES MAY BE SAFELY USED

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COLOR ADDITIVES

TUESDAY, JANUARY 26, 1960

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The committee met, pursuant to call, at 10 a.m., in the committee room, New House Office Building, Hon. Oren Harris, chairman of the committee, presiding.

The CHAIRMAN. The committee will come to order.

The Chair observes we have a full house this morning. We regret we are unable to accommodate everyone with a seat.

I hope, in view of the circumstances, that you will bear with us during these hearings. It will be our purpose to accommodate everyone we possibly can. If we can make more seats available during the day, we will certainly be glad to do so.

The Committee on Interstate and Foreign Commerce is meeting this morning to begin hearings on two bills that would amend the Federal Food, Drug, and Cosmetic Act so as to authorize the use of suitable color additives in or on foods, drugs, and cosmetics, in accordance with regulations to be issued by the Secretary of Health, Education, and Welfare, prescribing the conditions, including maximum tolerances, under which such additives may be safely used.

Under present law, the treatment of color additives differs radically as between the so-called coal tar colors and other colors.

Coal tar colors must be tested by the Food and Drug Administration and certified as "harmless and suitable for use" before they can be used. Some colors originally listed as "harmless' have been found, through advances in scientific knowledge, to produce injury when fed to animals in large amounts, and have been therefore removed from the certified list.

The Federal Food, Drug and Cosmetic Act presently does not permit the establishment of tolerances for even safe amounts of coal tar colors. It will be recalled that a temporary exception was made last year when this committee approved an amendment to the act, which was passed by the Congress and became Public Law 86–2, permitting the temporary listing and certification of the color Citrus Red No. 2 for coloring mature oranges under tolerances found to be safe by the Secretary of the Department of Health, Education, and Welfare.

I might say during the time we were considering this proposal we decided that it would be a temporary measure. This committee assured the Congress and the public that we would undertake to consider permanent legislation prior to the time of the termination of the temporary act.

This meeting today and this consideration is pursuant to the promise made at that time.

With respect to colors other than coal tar colors, the present law does not require any pretesting, listing, or certification by the Secretary of Health, Education, and Welfare as harmless and suitable for use in cosmetics and drugs.

Non-coal-tar colors when used in food, however, are classified as "food additives" under the Food Additives Amendment of 1958—Public Law 85–929—and are subject to a requirement of safety clearance and to the establishment of tolerance limitations and other conditions of safe use where necessary for the protection of public health.

I might say that the Food Additives Amendment of 1958 was approved by this committee after lengthy hearings and consideration.

The proposed legislation would do away with the differences in legal requirements and treatment as between so-called coal tar colors and other color additives, and would establish a uniform basis for determining the safe use of any coloring material in or on foods, drugs and cosmetics. Generally speaking, this legislation would bring color additives under the same type of control as is now in effect for food additives.

One of the bills before the committee is H.R. 7624, which I introduced on June 9 of last year at the request of the Secretary of Health, Education, and Welfare. The other bill is S. 2197, which came to us from the Senate, passed by that body on August 24, 1959, and which has been referred to us for consideration.

The Senate bill, I am informed, was reported by the Committee on Labor and Public Welfare without holding public hearings. Our hearings, beginning today, will, therefore, provide interested parties an opportunity to express themselves on both of these proposals.

I observe the presence of our colleague from New York, Mr. Delaney.

Jim, will you come around and join us? I will be glad if you would.

Mr. Delaney is the author of the so-called anticancer clause in the present food additives law, and that clause is repeated in H.R. 7624.

As I understand it, the principal difference between the House and Senate bills is the fact that the House bill contains the Delaney clause and the Senate-approved bill does not contain this clause. Under this clause a color additive would be deemed unsafe and may not be listed if it is found by appropriate tests to induce cancer in man or animal.

We now have quite a large list of witnesses that are anxious to be heard. We realize the intense interest in the subject and we want to accommodate everyone that we possibly can. In view of this situation the committee wants to proceed as expeditiously as we can and yet have a full and complete hearing and develop a complete record on it. It is the hope that the oral presentations will be as brief as possible to get a complete record, and unrepetitive, so that we can conclude the hearings at an early date.

The committee will receive prepared statements and will have them included in the record as they are prepared. If witnesses would like to make brief statements on them they may do so.

We will have these hearings today and tomorrow. On Thursday the committee will have an executive session, on other legislation, and then we will resume these hearings on Friday of this week.

Copies of both bills referred to, H.R. 7624 and S. 2197, will be included in the record at this point, together with agency reports thereon, which will be inserted in the record at this point.

(H.R. 7624 and S. 2197 and agency reports follow:)

[H.R. 7624, 86th Cong., 1st sess.]

A BILL To protect the public health by amending the Federal Food, Drug, and Cosmetic Act so as to authorize the use of suitable color additives in or on foods, drugs, and cosmetics, in accordance with regulations prescribing the conditions (including maximum tolerances) under which such additives may be safely used

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Color Additive Amendments of 1959."

TITLE I—AMENDMENTS TO THE FEDERAL FOOD, DRUG, AND COSMETIC ACT

DEFINITIONS

SEC. 101. Section 201, as amended, of the Federal Food, Drug, and Cosmetic Act is further amended as follows:

(a) Paragraph (s) of such section (defining the term "food additive") is amended by redesignating clause (3) as clause (4), and by inserting immediately before clause (4), as so redesignated, the following new clause:

"(3) a color additive; or".

(b) Paragraph (t) of such section is redesignated and otherwise amended to read as follows:

"(u) The term 'safe', as used in paragraph (s) of this section and in sections 409 and 706, has reference to the health of man or animal."

(c) There is inserted, immediately after paragraph (s) of such section, the following new paragraph:

"(t)(1) The term 'color additive' means a material which—

"(A) is a dye, pigment, or other substance made by a process of synthesis or similar artifice, or extracted, isolated, or otherwise derived, with or without intermediate or final change of identity, from a vegetable, animal, mineral, or other source, and

"(B) when added or applied to a food, drug, or cosmetic, or to the human body or any part thereof, is capable (alone or through reaction with other substance) of imparting color thereto;

except that such term does not include any material which the Secretary, by regulation, determines is used (or intended to be used) solely for a purpose of purposes other than coloring.

"(2) The term 'color' includes black, white, and intermediate grays."

COLORS OR COLORED ARTICLES—WHEN DEEMED TO BE ADULTERATED OR MISBRANDED FOODS, DRUGS, OR COSMETICS

Food

SEC. 102. (a)(1) Clause (2)(A) of section 402(a), as amended, of such Act (relating to food deemed adulterated by reason of unsafe additives) is further amended by striking out the matter within the parentheses and inserting in lieu thereof the following: "other than one which is (i) a pesticide chemical in or on a raw agricultural commodity; (ii) a food additive; or (iii) a color additive".

(2) Section 402(c), as amended, of such Act (relating to food deemed adulterated by reason of uncertified coal-tar color) is amended to read as follows:

"(c) If it is, or it bears or contains, a color additive which is unsafe within the meaning of section 706(a)."

(3) Section 403 of such Act (relating to the circumstances under which food is deemed misbranded) is amended by adding at the end thereof the following new paragraph:

"(l) If it is a color additive, unless its packaging and labeling are in conformity with such packaging and labeling requirements, applicable to such color additive, as may be contained in regulations issued under section 706."

Drugs

(b)(1) Clause (4) of section 501(a) of such Act (relating to drugs deemed adulterated by reason of uncertified coal tar color) is amended to read as follows: "(4) if (A) it is a drug which bears or contains, for purposes of coloring only, a color additive which is unsafe within the meaning of section 706(a), or (B) it is a color additive the intended use of which in or on drugs is for purposes of coloring only and is unsafe within the meaning of section 706(a)."

(2) Section 502 of such Act (relating to the circumstances under which drugs are deemed misbranded) is amended by adding at the end thereof the following new paragraph:

"(m) If it is a color additive the intended use of which in or on drugs is for the purpose of coloring only, unless its packaging and labeling are in conformity with such packaging and labeling requirements, applicable to such color additive, as may be contained in regulations issued under section 706."

Cosmetics

(c)(1) Section 601(e) of such Act (relating to cosmetics, other than hair dyes, deemed adulterated by reason of uncertified coal tar color) is amended to read as follows:

"(e) If it is not a hair dye and it is, or it bears or contains, a color additive which is unsafe within the meaning of section 706(a)."

(2) Section 602 of such Act (relating to the circumstances under which cosmetics shall be deemed to be misbranded) is amended by adding at the end thereof the following new paragraph:

"(e) If it is a color additive, unless its packaging and labeling are in conformity with such packaging and labeling requirements, applicable to such color additive, as may be contained in regulations issued under section 706. This paragraph shall not apply to packages of color additives which, with respect to their use for cosmetics, are marketed and intended for use only in or on hair dyes (as defined in the last sentence of section 601(a))."

REGULATIONS TO ASSURE SAFETY OF COLOR ADDITIVES FOR FOODS, DRUGS, AND COSMETICS

SEC. 103. (a) Such Act is further amended by—

(1) repealing subsection (b) of section 406 and striking out the subsection designation "(a)" after "SEC. 406." in such section:

(2) repealing section 504;

(3) repealing section 604; and

(4) amending section 701(e) by (A) striking out "406 (a) or (b)" and inserting in lieu thereof "406"; (B) striking out "504, or 604,"; and (C) inserting the word "or" after "501(b),".

(b) Section 706 of such Act is amended to read as follows:

"LISTING AND CERTIFICATION OF COLOR ADDITIVES FOR FOODS, DRUGS, AND COSMETICS

"When Color Additives Deemed Unsafe

"SEC. 706. (a) A color additive shall, with respect to any particular use (for which it is being used or intended to be used or is represented as suitable) in or on food or drugs or cosmetics, be deemed unsafe for the purposes of the application of section 402(c), section 501(a)(4), or section 601(e), as the case may be, unless—

"(1)(A) there is in effect, and such additive and such use are in conformity with, a regulation issued under subsection (b) of this section listing such additive for such use, including any provision of such regulation prescribing the conditions under which such additive may be safely used, and (B) such additive either (i) is from a batch certified, in accordance with regulations issued pursuant to subsection (c), for such use, or (ii) has, with respect to such use, been exempted by the Secretary from the requirement of certification; or

"(2) such additive and such use thereof conform to the terms of an exemption which is in effect pursuant to subsection (f) of this section.

While there are in effect regulations under subsections (b) and (c) of this section relating to a color additive or an exemption pursuant to subsection (f)

with respect to such additive, an article shall not, by reason of bearing or containing such additive in all respects in accordance with such regulations or such exemption, be considered adulterated within the meaning of clause (1) of section 402(a) if such article is a food, or within the meaning of section 601(a) if such article is a cosmetic other than a hair dye (as defined in the last sentence of section 601(a)).

"Listing of Colors

"(b)(1) The Secretary shall, by regulation, provide for separately listing color additives for use in or on food, color additives for use in or on drugs, and color additives for use in or on cosmetics, if and to the extent that such additives are suitable and safe for any such use when employed in accordance with such regulations.

"(2)(A) Such regulations may list any color additive for use generally in or on food, or in or on drugs, or in or on cosmetics, if the Secretary finds that such additive is suitable and may safely be employed for such general use.

"(B) If the data before the Secretary do not establish that the additive satisfies the requirements for listing such additive on the applicable list pursuant to subparagraph (A) of this paragraph, or if the proposal is for listing such additive for a more limited use or uses, such regulations may list such additive only for any more limited use or uses for which it is suitable and may safely be employed.

"(3) Such regulations shall, to the extent deemed necessary by the Secretary to assure the safety of the use or uses for which a particular color additive is listed, prescribe the conditions under which such additive may be safely employed for such use or uses (including, but not limited to, specifications, hereafter in this section referred to as tolerance limitations, as to the maximum quantity or quantities which may be used or permitted to remain in or on the article or articles in or on which it is used; specifications as to the manner in which such additive may be added to or used in or on such article or articles; and directions or other labeling or packaging requirements for such additive).

"(4) The Secretary shall not list a color additive under this section for a proposed use unless the data before him establish—

"(A) that such use, under the conditions of use to be specified in the regulations, will be safe;

"(B) that practicable methods of analysis exist for determining the quantity of the pure dye and all intermediates and other impurities contained in such color additive; and

"(C) that practicable methods exist for determining the identity and quantity (i) of such additive in or on any article of food, drug, or cosmetic, and (ii) of any substance formed in or on such article because of the use of such additive.

"(5) (A) In determining, for the purposes of this section, whether a proposed use of a color additive is safe, the Secretary shall consider, among other relevant factors—

"(i) the probable consumption of, or other relevant exposure from, the additive and of any substance formed in or on food, drugs, or cosmetics because of the use of the additive,

"(ii) the cumulative effect, if any, of such additive in the diet of man or animals, taking into account the same or any chemically or pharmacologically related substance or substances in such diet; and

"(iii) safety factors which, in the opinion of experts qualified by scientific training and experience to evaluate the safety of color additives for the use or uses for which the additive is proposed to be listed, are generally recognized as appropriate for the use of animal experimentation data.

"(B) A color additive (i) shall be deemed unsafe, and shall not be listed, for any use which will or may result in ingestion of all or part of such additive, if the additive is found to induce cancer when ingested by man or animal, or if it is found, after tests which are appropriate for the evaluation of the safety of additives for use in food, to induce cancer in man or animal, and (ii) shall be deemed unsafe, and shall not be listed, for any use which will not result in ingestion of any part of such additive if, after tests which are appropriate for the evaluation of the safety of additives for such use, or after other relevant exposure of man or animal to such additive, it is found to induce cancer in man or animal.

"(6) The Secretary shall not list a color additive under this subsection for a proposed use if the data before him show that such proposed use would promote

deception of the consumer in violation of this Act or would otherwise result in misbranding or adulteration within the meaning of this Act.

"(7) If, in the judgment of the Secretary, a tolerance limitation is required in order to assure that a proposed use of a color additive will be safe, the Secretary—

"(A) shall not list the additive for such use if he finds that the data before him do not establish that such additive, if used within a safe tolerance limitation, would achieve the intended physical or other technical effect; and

"(B) shall not fix such tolerance limitation at a level higher than he finds to be reasonably required to accomplish the intended physical or other technical effect.

"(8) If, having regard to the aggregate quantity of color additive likely to be consumed in the diet or to be applied to the human body, the Secretary finds that the data before him fail to show that it would be safe and otherwise permissible to list a color additive (or pharmacologically related color additives) for all the uses proposed therefor and at the levels of concentration proposed, the Secretary shall, in determining for which use or uses such additive (or such related additives) shall be or remain listed, or how the aggregate allowable safe tolerance for such additive or additives shall be allocated by him among the uses under consideration, take into account, among other relevant factors (and subject to the paramount criterion of safety), (A) the relative marketability of the articles involved as affected by the proposed uses of the color additive (or of such related additives) in or on such articles, and the relative dependence of the industries concerned on such uses; (B) the relative aggregate amounts of such color additive which he estimates would be consumed in the diet or applied to the human body by reason of the various uses and levels of concentration proposed; and (C) the availability, if any, of other color additives suitable and safe for one or more of the uses proposed.

"Certification of Colors

"(c) The Secretary shall further, by regulation, provide (1) for the certification, with safe diluents or without diluents, of batches of color additives listed pursuant to subsection (b) and conforming to the requirements for such additives established by regulations under such subsection and this subsection, and (2) for exemption from the requirement of certification in the case of any such additive, or any listing or use thereof, for which he finds such requirement not to be necessary in the interest of the protection of the public health.

"Procedure for Issuance, Amendment, or Repeal of Regulations

"(d) The provisions of section 701(e), (f), and (g) of this Act shall apply to and in all respects govern proceedings for the issuance, amendment, or repeal of regulations under subsections (b), (c), or (e) of this section (including judicial review of the Secretary's action in such proceedings) and the admissibility of transcripts of the record of such proceedings in other proceedings, except that—

"(1) the Secretary's order after public hearing (acting upon objections filed to an order made prior to hearing) shall be subject to the requirements of section 409(f)(2); and

"(2) the scope of judicial review of such order shall be in accordance with the third sentence of paragraph (2), and with the provisions of paragraph (3), of section 409(g).

"Fees

"(e) The admitting to listing and certification of color additives, in accordance with regulations prescribed under this Act, shall be performed only upon payment of such fees, which shall be specified in such regulations, as may be necessary to provide, maintain, and equip an adequate service for such purposes.

"Exemptions

"(f) The Secretary shall by regulation (issued without regard to subsection (d)) provide for exempting from the requirements of this section any color additive or any specific type of use thereof, and any article of food, drug, or cosmetic bearing or containing such additive, intended solely for investigational use by qualified experts when in his opinion such exemption is consistent with the public health."

CONFIDENTIALITY OF TRADE SECRETS

SEC. 104. Section 301(j), as amended, of such Act, prohibiting disclosure of trade secrets, is amended by striking out "or 704" and inserting in lieu thereof "704, or 706".

CHANGES IN CROSS-REFERENCES AND TERMINOLOGY

SEC. 105. Such Act is further amended by—

(a) striking out, in section 301(i) thereof (relating to forgery or unauthorized use of certain identification devices), "404, 406(b), 504, 506, 507, or 604", and inserting in lieu thereof "404, 506, 507, or 706";

(b) (1) striking out, in clause (3) of section 303(c) (relating to color manufacturer's guarantee), the word "coal-tar" wherever it appears in such clause, and (2) inserting after the word "color", wherever it appears in such clause, the word "additive"; and

(c) striking out "harmless coloring" in section 402(d) (relating to nonnutritive substances in confectionery) and inserting in lieu thereof "authorized coloring".

TITLE II—EFFECTIVE DATE, TRANSITIONAL PROVISIONS, AND EFFECT ON OTHER LAWS

DEFINITIONS

SEC. 201. As used in this title, the term "basic Act" means the Federal Food, Drug, and Cosmetic Act; the term "enactment date" means the date of enactment of this Act; and other terms, insofar as also used in the basic Act (whether before or after enactment of this Act) shall have the same meaning as they have, or had when in effect, under the basic Act.

EFFECTIVE DATE

SEC. 202. This Act shall, subject to the provisions of section 203, take effect on the enactment date.

PROVISIONAL LISTINGS OF COMMERCIALLY ESTABLISHED COLORS

SEC. 203. (a) (1) The purpose of this section is to make possible, on an interim basis for a reasonable period, through provisional listings, the use of commercially established color additives to the extent consistent with the public health, pending the completion of the scientific inevstigations needed as a basis for making determinations as to listing of such additives under the basic Act as amended by this Act. A provisional listing (including a deemed provisional listing) of a color additive under this section for any use shall, unless sooner terminated or expiring under the provisions of this section, expire (A) on the closing date (as defined in paragraph (2) of this subsection) or (B) on the effective date of a listing of such additive for such use under section 706 of the basic Act, whichever date first occurs.

(2) For the purposes of this section, the term "closing date" means (A) the last day of the two and one-half year period beginning on the enactment date or (B), with respect to a particular provisional listing (or deemed provisional listing) of a color additive or use thereof, such later closing date as the Secretary may from time to time establish pursuant to the authority of this paragraph. The Secretary may by regulation, upon application of an interested person or on his own initiative, from time to time postpone the original closing date with respect to a provisional listing (or deemed provisional listing) under this section of a specified color additive, or of a specified use or uses of such additive, for such period or periods as he finds necessary to carry out the purpose of this section, if in the Secretary's judgment such action is consistent with the objective of carrying to completion in good faith, as soon as reasonably practicable, the scientific investigations necessary for making a determination as to listing such additive, or such specified use or uses thereof, under section 706 of the basic Act. The Secretary may terminate a postponement of the closing date at any time if he finds that such postponement should not have been granted, or that by reason of a change in circumstances the basis for such postponement no longer exists, or that there has been a failure to comply with a requirement for submission of progress reports or with other conditions attached to such postponement.

(b) Subject to the other provisions of this section—

(1) any color additive which, on the day preceding the enactment date, was listed and certifiable for any use or uses under section 406(b), 504, or 604, or under the third proviso of section 402(c), of the basic Act, and of which a batch or batches had been certified for such use or uses prior to the enactment date, and

(2) any color additive which was commercially used or sold prior to the enactment date for any use or uses in or on any food, drug, or cosmetic, and which either, (A), on the day preceding the enactment date, was not a material within the purview of any of the provisions of the basic Act enumerated in paragraph (1) of this subsection, or (B) is the color additive known as synthetic beta-carotene,

shall, beginning on the enactment date, be deemed to be provisionally listed under this section as a color additive for such use or uses.

(c) Upon request of any person, the Secretary, by regulations issued under subsection (d), shall without delay, if on the basis of the data before him he deems such action consistent with the protection of the public health, provisionally list a material as a color additive for any use for which it was listed, and for which a batch or batches of such material had been certified, under section 406(b), 504, or 604 of the basic Act prior to the enactment date, although such color was no longer listed and certifiable for such use under such sections on the day preceding the enactment date. Such provisional listing shall take effect on the date of publication.

(d)(1) The Secretary shall, by regulations issued or amended from time to time under this section—

(A) insofar as practicable promulgate and keep current a list or lists of the color additives, and of the particular uses thereof, which he finds are deemed provisionally listed under subsection (b), and the presence of a color additive on such a list with respect to a particular use shall, in any proceeding under the basic Act, be conclusive evidence that such provisional listing is in effect;

(B) provide for the provisional listing of the color additives and particular uses thereof specified in subsection (c);

(C) provide, with respect to particular uses for which color additives are or are deemed to be provisionally listed, such temporary tolerance limitations (including such limitations at zero level) and other conditions of use and labeling or packaging requirements, if any, as in his judgment are necessary to protect the public health pending listing under section 706 of the basic Act;

(D) provide for the certification of batches of such color additives (with or without diluents) for the uses for which they are so listed or deemed to be listed under this section, except that such an additive which is a color additive deemed provisionally listed under subsection (b)(2) of this section shall be deemed exempt from the requirement of such certification while not subject to a tolerance limitation; and

(E) provide for the termination of a provisional listing (or deemed provisional listing) of a color additive or particular use thereof forthwith whenever in his judgment such action is necessary to protect the public health.

(2)(A) Regulations under this section shall, from time to time, be issued, amended, or repealed by the Secretary without regard to the requirements of the basic Act, but for the purposes of the application of section 706(e) of the basic Act (relating to fees) and of determining the availability of appropriations of fees (and of advance deposits to cover fees), proceedings, regulations, and certifications under this section shall be deemed to be proceedings, regulations, and certifications under such section 706.

(B) On and after the enactment date, regulations, provisional listings, and certifications (or exemptions from certification) in effect under this section shall, for the purpose of determining whether an article is adulterated or misbranded with the meaning of the basic Act by reason of its being, bearing, or containing a color additive, have the same effect as would regulations, listings, and certifications (or exemptions from certification) under section 706 of the basic Act. A regulation, provisional listing or termination thereof, tolerance limitation, or certification or exemption therefrom, under this section shall not be the basis for any presumption or inference in any proceeding under section 706 (b) or (c) of the basic Act.

(3) For the purpose of enabling the Secretary to carry out his functions under paragraph (1) (A) and (C) with respect to color additives deemed provisionally listed, he shall, as soon as practicable after enactment of this Act, afford by public notice a reasonable opportunity to interested persons to submit data relevant thereto. If the data so submitted or otherwise before him do not, in his judgment, establish a reliable basis for including such a color additive or particular use or uses thereof in a list or lists promulgated under paragraph (1)(A), or for determining the prevailing level or levels of use thereof prior to the enactment date with a view to prescribing a temporary tolerance or tolerances for such use or uses under paragraph (1)(C), the Secretary shall establish a temporary tolerance limitation at zero level for such use or uses until such time as he finds that it would not be inconsistent with the protection of the public health to increase or dispense with such temporary tolerance limitation.

EFFECT ON MEAT INSPECTION AND POULTRY PRODUCTS INSPECTION ACTS

SEC. 204. Nothing in this Act shall be construed to exempt any meat or meat food product or any person from any requirement imposed by or pursuant to the Meat Inspection Act of March 4, 1907, 34 Stat. 1260, as amended or extended (21 U.S.C. 71 and the following), or the Poultry Products Inspection Act (21 U.S.C. 451 and the following).

[S. 2197, 86th Cong., 1st sess.]

AN ACT To protect the public health by amending the Federal Food, Drug, and Cosmetic Act so as to authorize the use of suitable color additives in or on foods, drugs, and cosmetics, in accordance with regulations prescribing the conditions (including maximum tolerances) under which such additives may be safely used

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Color Additive Amendments of 1959".

TITLE I—AMENDMENTS TO THE FEDERAL FOOD, DRUG, AND COSMETIC ACT

DEFINITIONS

SEC. 101. Section 201, as amended, of the Federal Food, Drug, and Cosmetic Act is further amended as follows:

(a) Paragraph (s) of such section (defining the term "food additive") is amended by redesignating clause (3) as clause (4), and by inserting immediately before clause (4), as so redesignated, the following new clause:

"(3) a color additive; or".

(b) Paragraph (t) of such section is redesignated and otherwise amended to read as follows:

"(u) The term 'safe', as used in paragraph (s) of this section and in sections 409 and 706, has reference to the health of man or animal."

(c) There is inserted, immediately after paragraph (s) of such section, the following new paragraph:

"(t)(1) The term 'color additive' means a material which—

"(A) is a dye, pigment, or other substance made by a process of synthesis or similar artifice, or extracted, isolated, or otherwise derived, with or without intermediate or final change of identity, from a vegetable, animal, mineral, or other source, and

"(B) when added or applied to a food, drug, or cosmetic, or to the human body or any part thereof, is capable (alone or through reaction with other substance) of imparting color thereto;

except that such term does not include any material which the Secretary, by regulation, determines is used (or intended to be used) solely for a purpose or purposes other than coloring.

"(2) The term 'color' includes black, white, and intermediate grays."

COLORS OR COLORED ARTICLES—WHEN DEEMED TO BE ADULTERATED OR MISBRANDED FOODS, DRUGS, OR COSMETICS

Food

SEC. 102. (a)(1) Clause (2)(A) of section 402(a), as amended, of such Act (relating to food deemed adulterated by reason of unsafe additives) is fur-

ther amended by striking out the matter within the parentheses and inserting in lieu thereof the following: "other than one which is (i) a pesticide chemical in or on a raw agricultural commodity; (ii) a food additive".

(2) Section 402(c), as amended, of such Act (relating to food deemed adulterated by reason of uncertified coal-tar color) is amended to read as follows:

"(c) If it is, or it bears or contains, a color additive which is unsafe within the meaning of section 706(a)."

(3) Section 403 of such Act (relating to the circumstances under which food is deemed misbranded) is amended by adding at the end thereof the following new paragraph:

"(l) If it is a color additive, unless its packaging and labeling are in conformity with such packaging and labeling requirements, applicable to such color additive, as may be contained in regulations issued under section 706."

Drugs

(b)(1) Clause (4) of section 501(a) of such Act (relating to drugs deemed adulterated by reason of uncertified coal-tar color) is amended to read as follows: "(4) if (A) it is a drug which bears or contains, for purposes of coloring only, a color additive which is unsafe within the meaning of section 706(a), or (B) it is a color additive the intended use of which in or on drugs is for purposes of coloring only and is unsafe within the meaning of section 706(a)."

(2) Section 502 of such Act (relating to the circumstances under which drugs are deemed misbranded) is amended by adding at the end thereof the following new paragraph:

"(m) If it is a color additive the intended use of which in or on drugs is for the purpose of coloring only, unless its packaging and labeling are in conformity with such packaging and labeling requirements, applicable to such color additive, as may be contained in regulations issued under section 706."

Cosmetics

(c)(1) Section 601(e) of such Act (relating to cosmetics, other than hair dyes, deemed adulterated by reason of uncertified coal-tar color) is amended to read as follows:

"(e) If it is not a hair dye and it is, or it bears or contains, a color additive which is unsafe within the meaning of section 706(a)."

(2) Section 602 of such Act (relating to the circumstances under which cosmetics shall be deemed to be misbranded) is amended by adding at the end thereof the following new paragraph:

"(e) If it is a color additive, unless its packaging and labeling are in conformity with such packaging and labeling requirements, applicable to such color additive, as may be contained in regulations issued under section 706. This paragraph shall not apply to packages of color additives which, with respect to their use for cosmetics, are marketed and intended for use only in or on hair dyes (as defined in the last sentence of section 601(a))."

REGULATIONS TO ASSURE SAFETY OF COLOR ADDITIVES FOR FOODS, DRUGS, AND COSMETICS

SEC. 103. (a) Such Act is further amended by—

(1) repealing subsection (b) of section 406 and striking out the subsection designation "(a)" after "SEC. 406." in such section;

(2) repealing section 504;

(3) repealing section 604; and

(4) amending section 701(e) by (A) striking out "406 (a) or (b)" and inserting in lieu thereof "406"; (B) striking out "504, or 604,"; and (C) inserting the word "or" after "501(b),".

(b) Section 706 of such Act is amended to read as follows:

"LISTING AND CERTIFICATION OF COLOR ADDITIVES FOR FOODS, DRUGS, AND COSMETICS

"When Color Additives Deemed Unsafe

"SEC. 706. (a) A color additive shall, with respect to any particular use (for which it is being used or intended to be used or is represented as suitable) in or on food or drugs or cosmetics, be deemed unsafe for the purposes of the application of section 402(c), section 501(a)(4), or section 601(e), as the case may be, unless—

"(1)(A) there is in effect, and such additive and such use are in conformity with, a regulation issued under subsection (b) of this section listing such additive for such use, including any provision of such regulation prescribing the conditions under which such additive may be safely used, and (B) such additive either (i) is from a batch certified, in accordance with regulations issued pursuant to subsection (c), for such use, or (ii) has, with respect to such use, been exempted by the Secretary from the requirement of certification; or

"(2) such additive and such use thereof conform to the terms of an exemption which is in effect pursuant to subsection (f) of this section.

While there are in effect regulations under subsections (b) and (c) of this section relating to a color additive or an exemption pursuant to subsection (f) with respect to such additive, an article shall not, by reason of bearing or containing such additive in all respects in accordance with such regulations or such exemption, be considered adulterated within the meanings of clause (1) of section 402(a) if such article is a food, or within the meaning of section 601(a) if such article is a cosmetic other than a hair dye (as defined in the last sentence of section 601(a)).

"Listing of Colors

"(b)(1) The Secretary shall, by regulation, provide for separately listing color additives for use in or on food, color additives for use in or on drugs, and color additives for use in or on cosmetics, if and to the extent that such additives are suitable and safe for any such use when employed in accordance with such regulations.

"(2)(A) Such regulations may list any color additive for use generally in or on food, or in or on drugs, or in or on cosmetics, if the Secretary finds that such additive is suitable and may safely be employed for such general use.

"(B) If the data before the Secretary do not establish that the additive satisfies the requirements for listing such additive on the applicable list pursuant to subparagraph (A) of this paragraph, or if the proposal is for listing such additive for a more limited use or uses, such regulations may list such additive only for any more limited use or uses for which it is suitable and may safely be employed.

"(3) Such regulations shall, to the extent deemed necessary by the Secretary to assure the safety of the use or uses for which a particular color additive is listed, prescribe the conditions under which such additive may be safely employed for such use or uses (including, but not limited to, specifications hereafter in this section referred to as tolerance limitations, as to the maximum quantity or quantities which may be used or permitted to remain in or on the article or articles in or on which it is used; specifications as to the manner in which such additive may be added to or used in or on such article or articles; and directions or other labeling or packaging requirements for such additive).

"(4) The Secretary shall not list a color additive under this section for a proposed use unless the data before him establish that such use, under the conditions of use specified in the regulations, will be safe: *Provided, however,* That a color additive shall be deemed to be suitable and safe for the purpose of listing under this subsection for use generally in or on food, while there is in effect a published finding of the Secretary declaring such substance exempt from the term 'food additive' because of its being generally recognized by qualified experts as safe for its intended use, as provided in section 201(s).

"(5) In determining, for the purposes of this section, whether a proposed use of a color additive is safe, the Secretary shall consider, among other relevant factors—

"(A) the probable consumption of, other revelant exposure from, the additive and of any substance formed in or on food, drugs, or cosmetics because of the use of the additive;

"(B) the cumulative effect, if any, of such additive in the diet of man or animals, taking into account the same or any chemically or pharmacologically related substance or substances in such diet;

"(C) safety factors which, in the opinion of experts qualified by scientific training and experience to evaluate the safety of color additives for the use or uses for which the additive is proposed to be listed, are generally recognized as appropriate for the use of animal experimentation data; and

"(D) the availability of any needed practicable methods of analysis for determining the identity and quantity of (i) the pure dye and all interme-

diates and other impurities contained in such color additive, (ii) such additive in or on any article of food, drug, or cosmetic, and (iii) any substance formed in or on such article because of the use of such additive.

"(6) The Secretary shall not list a color additive under this subsection for a proposed use if the data before him show that such proposed use would promote deception of the consumer in violation of this Act or would otherwise result in misbranding or adulteration within the meaning of this Act.

"(7) If, in the judgment of the Secretary, a tolerance limitation is required in order to assure that a proposed use of a color additive will be safe, the Secretary—

"(A) shall not list the additive for such use if he finds that the data before him do not establish that such additive, if used within a safe tolerance limitation, would achieve the intended physical or other technical effect; and

"(B) shall not fix such tolerance limitation at a level higher than he finds to be reasonably required to accomplish the intended physical or other technical effect.

"(8) If, having regard to the aggregate quantity of color additive likely to be consumed in the diet or to be applied to the human body, the Secretary finds that the data before him fail to show that it would be safe and otherwise permissible to list a color additive (or pharmacologically related color additives) for all the uses proposed therefor and at the levels of concentration proposed, the Secretary shall, in determining for which use or uses such additive (or such related additives) shall be or remain listed, or how the aggregate allowable safe tolerance for such additive or additives shall be allocated by him among the uses under consideration, take into account, among other relevant factors (and subject to the paramount criterion of safety), (A) the relative marketability of the articles involved as affected by the proposed uses of the color additive (or of such related additives) in or on such articles, and the relative dependence of the industries concerned on such uses; (B) the relative aggregate amounts of such color additive which he estimates would be consumed in the diet or applied to the human body by reason of the various uses and levels of concentration proproposed; and (C) the availability, if any, of other color additives suitable and safe for one or more of the uses proposed.

"Certification of Colors

"(c) The Secretary shall further, by regulation, provide (1) for the certification, with safe diluents or without diluents, of batches of color additives listed pursuant to subsection (b) and conforming to the requirements for such additives established by regulations under such subsection and this subsection, and (2) for exemption from the requirement of certification in the case of any such additive, or any listing or use thereof, for which he finds such requirement not to be necessary in the interest of the protection of the public health: *Provided*, That, with respect to any use in or on food for which a listed color additive is deemed to be safe by reason of the proviso to paragraph (4) of subsection (b), the requirement of certification shall be deemed not to be necessary in the interest of public health protection.

"Procedure for Issuance, Amendment, or Repeal of Regulations

"(d) The provisions of section 701(e), (f), and (g) of this Act shall apply to and in all respects govern proceedings for the issuance, amendment, or repeal of regulations under subsections (b), (c), or (e) of this section (including judicial review of the Secretary's action in such proceedings) and the admissibility of transcripts of the record of such proceedings in other proceedings, except that—

"(1) the Secretary's order after public hearing (acting upon objections filed to an order made prior to hearing) shall be subject to the requirements of section 409(f)(2); and

"(2) the scope of judicial review of such order shall be in accordance with the third sentence of paragraph (2), and with the provisions of paragraph (3), of section 409(g).

"Fees

"(e) The admitting to listing and certification of color additives, in accordance with regulations prescribed under this Act, shall be performed only upon payment of such fees, which shall be specified in such regulations, as may be necessary to provide, maintain, and equip an adequate service for such purposes.

"Exemptions

"(f) The Secretary shall by regulation (issued without regard to subsection (d) provide for exempting from the requirements of this section any color additive or any specific type of use thereof, and any article of food, drug, or cosmetic bearing or containing such additive, intended solely for investigational use by qualified experts when in his opinion such exemption is consistent with the public health."

CONFIDENTIALITY OF TRADE SECRETS

SEC. 104. Section 301(j), as amended, of such Act, prohibiting disclosure of trade secrets, is amended by striking out "or 704" and inserting in lieu thereof "704, or 706".

CHANGES IN CROSS-REFERENCES AND TERMINOLOGY

SEC. 105. Such Act is further amended by—

(a) striking out, in section 301(i) thereof (relating to forgery or unauthorized use of certain identification devices), "404, 406(b), 504, 506, 507, or 604", and inserting in lieu thereof "404, 506, 507, or 706";

(b)(1) striking out, in clause (3) of section 303 (c) (relating to color manufacturer's guarantee), the word "coal-tar" wherever it appears in such clause, and (2) inserting after the word "color", wherever it appears in such clause, the word "additive"; and

(c) striking out "harmless coloring" in section 402(d) (relating to nonnutritive substances in confectionery) and inserting in lieu thereof "authorized coloring".

TITLE II—EFFECTIVE DATE, TRANSITIONAL PROVISIONS, AND EFFECT ON OTHER LAWS

DEFINITIONS

SEC. 201. As used in this title, the term "basic Act" means the Federal Food, Drug, and Cosmetic Act; the term "enactment date" means the date of enactment of this Act; and other terms, insofar as also used in the basic Act (whether before or after enactment of this Act) shall have the same meaning as they have, or had when in effect, under the basic Act.

EFFECTIVE DATE

SEC. 202. This Act shall, subject to the provisions of section 203, take effect on the enactment date.

PROVISIONAL LISTINGS OF COMMERCIALLY ESTABLISHED COLORS

SEC. 203. (a)(1) The purpose of this section is to make possible, on an interim basis for a reasonable period, through provisional listings, the use of commercially established color additives to the extent consistent with the public health, pending the completion of the scientific investigations needed as a basis for making determinations as to listing of such additives under the basic Act as amended by this Act. A provisional listing (including a deemed provisional listing) of a color additive under this section for any use shall, unless sooner terminated or expiring under the provisions of this section, expire (A) on the closing date (as defined in paragraph (2) of this subsection) or (B) on the effective date of a listing of such additive for such use under section 706 of the basic Act, whichever date first occurs.

(2) For the purposes of this section, the term "closing date" means (A) the last day of the two and one-half year period beginning on the enactment date or (B), with respect to a particular provisional listing (or deemed provisional listing) of a color additive or use thereof, such later closing date as the Secretary may from time to time establish pursuant to the authority of this paragraph. The Secretary may by regulation, upon application of an interested person or on his own initiative, from time to time postpone the original closing date with respect to a provisional listing (or deemed provisional listing) under this section of a specified color additive, or of a specified use or uses of such additive, for such period or periods as he finds necessary to carry out the purpose of this section, if in the Secretary's judgment such action is consistent with the objective of carrying to completion in good faith, as soon as reason-

ably practicable, the scientific investigations necessary for making a determination as to listing such aditive, or such specified use or uses thereof, under section 706 of the basic Act. The Secretary may terminate a postponement of the closing date at any time if he finds that such postponement should not have been granted, or that by reason of a change in circumstances the basis for such postponement no longer exists, or that there has been a failure to comply with a requirement for submission of progress reports or with other conditions attached to such postponement.

(b) Subject to the other provisions of this section—

(1) any color additive which, on the day preceding the enactment date, was listed and certifiable for any use or uses under section 406(b), 504, or 604, or under the third proviso of section 402(c), of the basic Act, and of which a batch or batches had been certified for such use or uses prior to the enactment date, and

(2) any color additive which was commercially used or sold prior to the enactment date for any use or uses in or on any food, drug, or cosmetic, and which either (A) on the day preceding the enactment date was not a material within the purview of any of the provisions of the basic Act enumerated in paragraph (1) of this subsection, or (B) is the color additive known as synthetic beta-carotene,

shall, beginning on the enactment date, be deemed to be provisionally listed under this section as a color additive for such use or uses.

(c) Upon request of any person, the Secretary, by regulations issued under subsection (d), shall without delay, if on the basis of the data before him he deems such action consistent with the protection of the public health, provisionally list a material as a color additive for any use for which it was listed, and for which a batch or batches of such material had been certified, under section 406(b), 504, or 604 of the basic Act prior to the enactment date, although such color was no longer listed and certifiable for such use under such sections on the day preceding the enactment date. Such provisional listing shall take effect on the date of publication.

(d) (1) The Secretary shall, by regulations issued or amended from time to under this section—

(A) insofar as practicable promulgate and keep current a list or lists of the color additives, and of the particular uses thereof, which he finds are deemed provisionally listed under subsection (b), and the presence of a color additive on such a list with respect to a particular use shall, in any proceeding under the basic Act, be conclusive evidence that such provisional listing is in effect:

(B) provide for the provisional listing of the color additives and particular uses thereof specified in subsection (c);

(C) provide, with respect to particular uses for which color additives are or are deemed to be provisionally listed, such temporary tolerance limitations (including such limitations at zero level) and other conditions of use and labeling or packaging requirements, if any, as in his judgment are necessary to protect the public health pending listing under section 706 of the basic Act;

(D) provide for the certification of batches of such color additives (with or without diluents) for the uses for which they are so listed or deemed to be listed under this section, except that such an additive which is a color additive deemed provisionally listed under subsection (b)(2) of this section shall be deemed exempt from the requirement of such certification while not subject to a tolerance limitation; and

(E) provide for the termination of a provisional listing (or deemed provisional listing) of a color additive or particular use thereof forthwith whenever in his judgment such action is necessary to protect the public health.

(2)(A) Regulations under this section shall, from time to time, be issued, amended, or repealed by the Secretary without regard to the requirements of the basic Act, but for the purposes of the application of section 706(e) of the basic Act (relating to fees) and of determining the availability of appropriations of fees (and of advance deposits to cover fees), proceedings, regulations, and certifications under this section shall be deemed to be proceedings, regulations, and certifications under such section 706.

(B) On and after the enactment date, regulations, provisional listings, and certifications (or exemptions from certification) in effect under this section shall, for the purpose of determining whether an article is adulterated or misbranded within the meaning of the basic Act by reason of its being, bearing, or

containing a color additive, have the same effect as would regulations, listings, and certifications (or exemptions from certification) under section 706 of the basic Act. A regulation, provisional listing or termination thereof, tolerance limitation, or certification or exemption therefrom, under this section shall not be the basis for any presumption or inference in any proceeding under section 706(b) or (c) of the basic Art.

(3) For the purpose of enabling the Secretary to carry out his functions under paragraph (1)(A) and (C) with respect to color additives deemed provisionally listed, he shall, as soon as practicable after enactment of this Act, afford by public notice a reasonable opportunity to interested persons to submit data relevant thereto. If the data so submitted or otherwise before him do not, in his judgment, establish a reliable basis for including such a color additive or particular use of uses thereof in a list or lists promulgated under paragraph (1)(A), or for determining the prevailing level or levels of use thereof prior to the enactment date with a view to prescribing a temporary tolerance or tolerances for such use or uses under paragraph (1)(C), the Secretary shall establish a temporary tolerance limitation at zero level for such use or uses until such time as he finds that it would not be inconsistent with the protection of the public health to increase or dispense with such temporary tolerance limitation.

EFFECT ON MEAT INSPECTION AND POULTRY PRODUCTS INSPECTION ACTS

SEC. 204. Nothing in this Act shall be construed to exempt any meat or meat food product or any person from any requirement imposed by or pursuant to the Meat Inspection Act of March 4, 1907 (34 Stat. 1260), as amended or extended (21 U.S.C. 71 and the following), or the Poultry Products Inspection Act (21 U.S.C. 451 and the following).

Passed the Senate August 24, 1959.

Attest:

FELTON M. JOHNSTON,
Secretary.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
May 29, 1960.

Hon. SAM RAYBURN,
Speaker of the House of Representatives,
Washington, D.C.

DEAR MR. SPEAKER: We are enclosing herewith a draft bill to protect the public health by amending the Federal Food, Drug, and Cosmetic Act so as to authorize the use of suitable color additives in or on food, drugs, and cosmetics, in accordance with regulations prescribing the conditions (including maximum tolerances) under which such additives may be safely used. The bill may be referred to by the short title "Color Additive Amendments of 1959."

We respectfully urge the prompt consideration and enactment of this bill by Congress.

The bill is designed to meet a pressing need for replacing the inconsistent, and in part outmoded, provisions which now govern the use of different kinds of color for articles covered by the Federal Food, Drug, and Cosmetic Act, with a scientifically sound and uniform system for the listing of color additives of any kind which may safely be used in foods, drugs, or cosmetics, subject, when necessary, to appropriate tolerance limitations and other conditions of use and to official certification of batches of color so as to assure the safety of such use to the consumer.

The principal reasons which give rise to the need for this legislation may be summarized as follows:

1. The law with respect to coal tar colors—and this comprises most synthetic colors—is not in consonance with modern concepts of consumer protection, in that it does not allow us to list a color for safe use under regulations which place a limit on the amount of a color that may be used on an article and to establish other conditions of use. For food, and for drugs and cosmetics other than those externally applied, we must ban the use of such a color completely, as not being "harmless," if it is found to be toxic in the laboratory when fed in some concentrations, even though its actual level and manner of use may be completely safe; for externally applied drugs and cosmetics the same principle applies if toxicity appears in the laboratory in some concentrations by any relevant type of test, even though its actual level and manner of use is wholly safe.

The principle of allowing colors to be used under tolerance limitations was endorsed, in 1956, by a committee of recognized scientists appointed by the National Academy of Sciences to review the coal tar color research program of the Food and Drug Administration, as indicated by the following excerpt from the Committee's report: "This Committee feels compelled to indicate that certification of a compound as 'harmless and suitable for use' in food, drugs, and cosmetics as required under present law is unrealistic unless the level of use is specified."

2. The theoretically "perfect" public health protection once thought to be accorded by the present law regarding coal tar colors has turned out to be in fact inadequate. While, theoretically, only "harmless" colors may be listed, a retesting program of the Food and Drug Administration, employing the most modern testing techniques, has led to the discovery that many, perhaps most, of the so-called colors on the list may in fact be toxic in some concentrations; yet we cannot take a particular color off the list until we establish its toxicity by laboratory tests, a process which for the list as a whole may take as much as 20 years. Under the bill, there would, in general, be a maximum of 2½ years during which the retesting process for the established colors would have to be completed—primarily by industry—and during which we could establish temporary tolerance limitations, at zero level if necessary, to protect the public health. This maximum period could be extended only where, in a particular case, such extension is necessary to complete the required safety tests for a color and is found consistent with protection of the public health.

3. There is a need for making applicable to all color uses and all types of color—whether they be coal tar colors or others—the same pretesting requirements and, where necessary for the protection of color users and consumers, the same requirements for certification of colors to assure their purity and identity with those listed as safe. At present, there are no provisions for the certification of non-coal-tar colors; there is, moreover, no pretesting requirement for non-coal-tar color additives as such, other than food additives.

4. Unless the law, as proposed by the bill, is brought into conformity with modern methods of control by incorporation of the safe-for-use principle, it will become increasingly difficult, and may eventually became impossible, to find permissible colors to supply the demand for various important color uses on the part of consumers as well as the food, drug, and cosmetic industries. From the standpoint of the public interest there is no compensating advantage for the inflexibility of the present law in this respect.

The scientifically sound principle that we must consider conditions of use when passing on suitability and safety of a color additive has recently been approved by Congress in temporary emergency legislation (Public Law 86–2) with respect to one coal tar color, i.e., citrus red No. 2 for use in coloring oranges, after previous adoption of the "safe for use" principle in the Food Additive Amendment of 1958 (Public Law 85–929). The only reason we had suggested to Congress that the emergency legislation for citrus red No. 2 have a termination date was that color legislation limited to particular colors and articles of food is discriminatory and that permanent legislation on this subject should contain additional safeguards. Moreover, Public Law 86–2 on its face indicates the expectation that Congress will before long address itself to the problem of general color legislation.

The bill—by permitting, for a reasonable period, the provisional listing and certification of heretofore commercially established colors, under temporary tolerances where necessary for public-health protection, pending the development of the scientific data required for a definitive determination as to the listing of these colors under the permanent provisions of the bill—would permit an orderly transition to the control procedures of the bill. At the same time, the bill would establish on a permanent basis a sound system of color regulation fully protective of consumer interests.

A more detailed explanation of the principal changes made in existing law, and the reasons therefor, is attached to the draft bill. There is also enclosed herewith a section-by-section analysis of the bill.

The establishment of a tolerance system in this field requires, to an extent not involved in a system without tolerance limitations, a program of education of the user industries and public, and a program of enforcement activities by a thoroughly trained corps of inspectors and analysts. The fee provisions, which are the same as those under existing law for coal tar colors, would defray only the cost of maintaining the listing and certification service; additional costs

would be incurred for the enforcement and informational activities required by the establishment of a tolerance system. Enclosed herewith, as required by Public Law 801, 84th Congress, are statements of cost estimates and personnel requirements which would be entailed.

We should appreciate it if you would refer the enclosed draft bill, with the accompanying material, to the appropriate committee for consideration.

The Bureau of the Budget advises that there is no objection to the presentation of this proposed legislation to the Congress for its consideration.

Sincerely yours,

ARTHUR S. FLEMMING, *Secretary.*

A BILL To protect the public health by amending the Federal Food, Drug, and Cosmetic Act so as to authorize the use of suitable color additives in or on foods, drugs, and cosmetics, in accordance with regulations prescribing the conditions (including maximum tolerances) under which such additives may be safely used

Be it enacted by the Senate and House and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Color Additive Amendments of 1959."

TITLE I—AMENDMENTS TO THE FEDERAL FOOD, DRUG, AND COSMETIC ACT

DEFINITIONS

SEC. 101. Section 201, as amended, of the Federal Food, Drug, and Cosmetic Act is further amended as follows:

(a) Paragraph (s) of such section (defining the term "food additive") is amended by redesignating clause (3) as clause (4), and by inserting immediately before clause (4), as so redesignated, the following new clause:

"(3) a color additive; or".

(b) Paragraph (t) of such section is redesignated and otherwise amended to read as follows:

"(u) The term 'safe', as used in paragraph (s) of this section and in sections 409 and 706, has reference to the health of man or animal."

(c) There is inserted, immediately after paragraph (s) of such section, the following new paragraph:

"(t) (1) The term 'color additive' means a material which—

"(A) is a dye, pigment, or other substance made by a process of synthesis or similar artifice, or extracted, isolated, or otherwise derived, with or without intermediate or final change of identity, from a vegetable, animal, mineral, or other source, and

"(B), when added or applied to a food, drug, or cosmetic, or to the human body or any part thereof, is capable (alone or through reaction with other substance) of imparting color thereto;

except that such term does not include any material which the Secretary, by regulation, determines is used (or intended to be used) solely for a purpose or purposes other than coloring.

"(2) The term 'color' includes black, white, and intermediate grays."

COLORS OR COLORED ARTICLES—WHEN DEEMED TO BE ADULTERATED OR MISBRANDED FOODS, DRUGS, OR COSMETICS

Food

SEC. 102. (a) (1) Clause (2) (A) of section 402(a), as amended, of such Act (relating to food deemed adulterated by reason of unsafe additives) is further amended by striking out the matter within the parentheses and inserting in lieu thereof the following: "other than one which is (i) a pesticide chemical in or on a raw agricultural commodity; (ii) a food additive; or (iii) a color additive".

(2) Section 402(c), as amended, of such Act (relating to food deemed adulterated by reason of uncertified coal-tar color) is amended to read as follows:

"(c) If it is, or it bears or contains, a color additive which is unsafe within the meaning of section 706(a)."

(3) Section 403 of such Act (relating to the circumstances under which food is deemed misbranded) is amended by adding at the end thereof the following new paragraph:

"(1) If it is a color additive, unless its packaging and labeling are in conformity with such packaging and labeling requirements, applicable to such color additive, as may be contained in regulations issued under section 706."

Drugs

(b)(1) Clause (4) of section 501(a) of such Act (relating to drugs deemed adulterated by reason of uncertified coal-tar color) is amended to read as follows: "(4) if (A) it is a drug which bears or contains, for purposes of coloring only, a color additive which is unsafe within the meaning of section 706(a), or (B) it is a color additive the intended use of which in or on drugs is for purposes of coloring only and is unsafe within the meaning of section 706(a)."

(2) Section 502 of such Act (relating to the circumstances under which drugs are deemed misbranded) is amended by adding at the end thereof the following new paragraph:

"(m) If it is a color additive the intended use of which in or on drugs is for the purpose of coloring only, unless its packaging and labeling are in conformity with such packaging and labeling requirements, applicable to such color additive, as may be contained in regulations issued under section 706."

Cosmetics

(c)(1) Section 601(e) of such Act (relating to cosmetics, other than hair dyes, deemed adulterated by reason of uncertified coal-tar color) is amended to read as follows:

"(e) If it is not a hair dye and it is, or it bears or contains, a color additive which is unsafe within the meaning of section 706(a)."

(2) Section 602 of such Act (relating to the circumstances under which cosmetics shall be deemed to be misbranded) is amended by adding at the end thereof the following new paragraph:

"(e) If it is a color additive, unless its packaging and labeling are in conformity with such packaging and labeling requirements, applicable to such color additive, as may be contained in regulations issued under section 706. This paragraph shall not apply to packages of color additives which, with respect to their use for cosmetics, are marketed and intended for use only in or on hair dyes (as defined in the last sentence of section 601(a))."

REGULATIONS TO ASSURE SAFETY OF COLOR ADDITIVES FOR FOODS, DRUGS, AND COSMETICS

SEC. 103. (a) Such Act is further amended by—

(1) repealing subsection (b) of section 406 and striking out the subsection designation "(a)" after "SEC. 406." in such section;

(2) repealing section 504;

(3) repealing section 604; and

(4) amending section 701(e) by (A) striking out "406 (a) and (b)" and inserting in lieu thereof "406"; (B) striking out "504, or 604,"; and (C) inserting the word "or" after "501(b),".

(b) Section 706 of such Act is amended to read as follows:

"LISTING AND CERTIFICATION OF COLOR ADDITIVES FOR FOODS, DRUGS, AND COSMETICS

"When Color Additives Deemed Unsafe

"SEC. 706. (a) A color additive shall, with respect to any particular use (for which it is being used or intended to be used or is represented as suitable) in or on food or drugs or cosmetics, be deemed unsafe for the purposes of the application of section 402(c), section 501(a)(4), or section 601(e), as the case may be, unless—

"(1)(A) there is in effect, and such additive and such use are in conformity with, a regulation issued under subsection (b) of this section listing such additive for such use, including any provision of such regulation prescribing the conditions under which such additive may be safely used, and (B) such additive either (i) is from a batch certified, in accordance with regulations issued pursuant to subsection (c), for such use, or (ii) has, with respect to such use, been exempted by the Secretary from the requirement of certification; or

"(2) such additive and such use thereof conform to the terms of an exemption which is in effect pursuant to subsection (f) of this section.

While there are in effect regulations under subsections (b) and (c) of this section relating to a color additive or an exemption pursuant to subsection (f) with respect to such additive, an article shall not, by reason of bearing or containing such additive in all respects in accordance with such regulations or such exemption, be considered adulterated within the meaning of clause (1) of section 402(a) if such article is a food, or within the meaning of section 601(a) if such article is a cosmetic other than a hair dye (as defined in the last sentence of section 601(a)).

"Listing of Colors

"(b)(1) The Secretary shall, by regulation, provide for separately listing color additives for use in or on food, color additives for use in or on drugs, and color additives for use in or on cosmetics, if and to the extent that such additives are suitable and safe for any such use when employed in accordance with such regulations.

"(2)(A) Such regulations may list any color additive for use generally in or on food, or in or on drugs, or in or on cosmetics, if the Secretary finds that such additive is suitable and may safely be employed for such general use.

"(B) If the data before the Secretary do not establish that the additive satisfies the requirements for listing such additive on the applicable list pursuant to subparagraph (A) of this paragraph, or if the proposal is for listing such additive for a more limited use or uses, such regulations may list such additive only for any more limited use or uses for which it is suitable and may safely be employed.

"(3) Such regulations shall, to the extent deemed necessary by the Secretary to assure the safety of the use or uses for which a particular color additive is listed, prescribe the conditions under which such additive may be safely employed for such use or uses (including, but not limited to, specifications, hereafter in this section referred to as tolerance limitations, as to the maximum quantity or quantities which may be used or permitted to remain in or on the article or articles in or on which it is used; specifications as to the manner in which such additive may be added to or used in or on such article or articles; and directions or other labeling or packaging requirements for such additive).

"(4) The Secretary shall not list a color additive under this section for a proposed use unless the data before him establish—

"(A) that such use, under the conditions of use to be specified in the regulations, will be safe;

"(B) that practicable methods of analysis exist for determining the quantity of the pure dye and all intermediates and other impurities contained in such color additive; and

"(C) that practicable methods exist for determining the identity and quantity (i) of such additive in or on any article of food, drug, or cosmetic, and (ii) of any substance formed in or on such article because of the use of such additive.

"(5) (A) In determining, for the purposes of this section, whether a proposed use of a color additive is safe, the Secretary shall consider, among other relevant factors—

"(i) the probable cosumption of, or other relevant exposure from, the additive and of any substance formed in or on food, drugs, or cosmetics because of the use of the additive,

"(ii) the cumulative effect, if any, of such additive in the diet of man or animals, taking into account the same or any chemically or pharmacologically related substance or substances in such diet; and

"(iii) safety factors which, in the opinion of experts qualified by scientific training and experience to evaluate the safety of color additives for the use or uses for which the additive is proposed to be listed, are generally recognized as appropriate for the use of animal experimentation data.

"(B) A color additive (i) shall be deemed unsafe, and shall not be listed, for any use which will or may result in ingestion of all or part of such additive, if the additive is found to induce cancer when ingested by man or animal, or if it is found, after tests which are appropriate for the evaluation of the safety of additives for use in food, to induce cancer in man or animal, and (ii) shall be deemed unsafe, and shall not be listed, for any use which will not result in ingestion of any part of such additive, if, after tests which are appropriate for the evaluation of the safety of additives for such use, or after other relevant exposure of man or animal to such additive, it is found to induce cancer in man or animal.

"(6) The Secretary shall not list a color additive under this subsection for a proposed use if the data before him show that such proposed use would promote deception of the consumer in violation of this Act or would otherwise result in misbranding or adulteration within the meaning of this Act.

"(7) If, in the judgment of the Secretary, a tolerance limitation is required in order to assure that a proposed use of a color additive will be safe, the Secretary—

"(A) shall not list the additive for such use if he finds that the data before him do not establish that such additive, if used within a safe tolerance limitation, would achieve the intended physical or other technical effect; and

"(B) shall not fix such tolerance limitation at a level higher than he finds to be reasonably required to accomplish the intended physical or other technical effect.

"(8) If, having regard to the aggregate quantity of color additive likely to be consumed in the diet or to be applied to the human body, the Secretary finds that the data before him fail to show that it would be safe and otherwise permissible to list a color additive (or pharmacologically related color additives) for all the uses proposed therefor and at the levels of concentration proposed, the Secretary shall, in determining for which use or uses such additive (or such related additives) shall be or remain listed, or how the aggregate allowable safe tolerance for such additive or additives shall be allocated by him among the uses under consideration, take into account, among other relevant factors (and subject to the paramount criterion of safety), (A) the relative marketability of the articles involved as affected by the proposed uses of the color additive (or of such related additives) in or on such articles, and the relative dependence of the industries concerned on such uses; (B) the relative aggregate amounts of such color additive which he estimates would be consumed in the diet or applied to the human body by reason of the various uses and levels of concentration proposed; and (C) the availability, if any, of other color additives suitable and safe for one or more of the uses proposed.

"Certification of Colors

"(c) The Secretary shall further, by regulation, provide (1) for the certification, with safe diluents or without diluents, of batches of color additives listed pursuant to subsection (b) and conforming to the requirements for such additives established by regulations under such subsection and this subsection, and (2) for exemption from the requirement of certification in the case of any such additive, or any listing or use thereof, for which he finds such requirement not to be necessary in the interest of the protection of the public health.

"Procedure for Issuance, Amendment, or Repeal of Regulations

"(d) The provisions of section 701(e), (f), and (g) of this Act shall apply to and in all respects govern proceedings for the issuance, amendment, or repeal of regulations under subsections (b), (c), or (e) of this section (including judicial review of the Secretary's action in such proceedings) and the admissibility of transcripts of the record of such proceedings in other proceedings, except that—

"(1) the Secretary's order after public hearing (acting upon objections filed to an order made prior to hearing) shall be subject to the requiremnts of section 409(f)(2); and

"(2) the scope of judicial review of such order shall be in accordance with the third sentence of paragraph (2), and with the provisions of paragraph (3), of section 409(g).

"Fees

"(e) The admitting to listing and certification of color additives, in accordance with regulations prescribed under this Act, shall be performed only upon payment of such fees, which shall be specified in such regulations, as may be necessary to provide, maintain, and equip an adequate service for such purposes.

"Exemptions

"(f) The Secretary shall by regulation (issued without regard to subsection (d)) provide for exempting from the requirements of this section any color additive or any specific type of use thereof, and any article of food, drug, or cos-

metic bearing or containing such additive, intended solely for investigational use by qualified experts when in his opinion such exemption is consistent with the public health."

CONFIDENTIALITY OF TRADE SECRETS

SEC. 104. Section 301(j), as amended, of such Act, prohibiting disclosure of trade secrets, is amended by striking out "or 704" and inserting in lieu thereof "704, or 706".

CHANGES IN CROSS-REFERENCES AND TERMINOLOGY

SEC. 105. Such Act is further amended by—

(a) striking out, in section 301(i) thereof (relating to forgery or unauthorized use of certain identification devices), "404, 406(b), 504, 506, 507, or 604", and inserting in lieu thereof "404, 506, 507, or 706";

(b) (1) striking out, in clause (3) of section 303(c) (relating to color manufacturer's guaranty), the word "coal-tar" wherever it appears in such clause, and (2) inserting after the word "color", wherever it appears in such clause, the word "additive"; and

(c) striking out "harmless coloring" in section 402(d) (relating to nonnutritive substances in confectionery) and inserting in lieu thereof "authorized coloring".

TITLE II—EFFECTIVE DATE, TRANSITIONAL PROVISIONS, AND EFFECT ON OTHER LAWS

DEFINITIONS

SEC. 201. As used in this title, the term "basic Act" means the Federal Food, Drug, and Cosmetic Act; the term "enactment date" means the date of enactment of this Act; and other terms, insofar as also used in the basic Act (whether before or after enactment of this Act) shall have the same meaning as they have, or had when in effect, under the basic Act.

EFFECTIVE DATE

SEC. 202. This Act shall, subject to the provisions of section 203, take effect on the enactment date.

PROVISIONAL LISTINGS OF COMMERCIALLY ESTABLISHED COLORS

SEC. 203. (a) (1) The purpose of this section is to make possible, on an interim basis for a reasonable period, through provisional listings, the use of commercially established color additives to the extent consistent with the public health, pending the completion of the scientific investigations needed as a basis for making determinations as to listing of such additives under the basic Act as amended by this Act. A provisional listing (including a deemed provisional listing) of a color additive under this section for any use shall, unless sooner terminated or expiring under the provisions of this section, expire (A) on the closing date (as defined in paragraph (2) of this subsection) or (B) on the effective date of a listing of such additive for such use under section 706 of the basic Act, whichever date first occurs.

(2) For the purposes of this section, the term "closing date" means (A) the last day of the two and one-half year period beginning on the enactment date or (B), with respect to a particular provisional listing (or deemed provisional listing) of a color additive or use thereof, such later closing date as the Secretary may from time to time establish pursuant to the authority of this paragraph. The Secretary may by regulation, upon application of an interested person or on his own initiative, from time to time postpone the original closing date with respect to a provisional listing (or deemed provisional listing) under this section of a specified color additive, or of a specified use or uses of such additive, for such period or periods as he finds necessary to carry out the purpose of this section, if in the Secretary's judgment such action is consistent with the objective of carrying to completion in good faith, as soon as reasonably practicable, the scientific investigations necessary for making a determination as to listing such additive, or such specified use or uses thereof, under section 706 of the basic Act. The Secretary may terminate a postponement of the closing date at any time if he finds that such postponement should not have been granted, or that by reason of a change in circumstances the basis for such postponement no longer exists,

or that there has been a failure to comply with a requirement for submission of progress reports or with other conditions attached to such postponement.

(b) Subject to the other provisions of this section—

(1) any color additive which, on the day preceding the enactment date, was listed and certifiable for any use or uses under section 406(b), 504, or 604, or under the third proviso of section 402(c), of the basic Act, and of which a batch or batches had been certified for such use or uses prior to the enactment date, and

(2) any color additive which was commercially used or sold prior to the enactment date for any use or uses in or on any food, drug, or cosmetic, and which either, (A), on the day preceding the enactment date, was not a material within the purview of any of the provisions of the basic Act enumerated in paragraph (1) of this subsection, or (B) is the color additive known as synthetic beta-carotene,

shall, beginning on the enactment date, be deemed to be provisionally listed under this section as a color additive for such use or uses.

(c) Upon request of any person, the Secretary, by regulations issued under subsection (d), shall without delay, if on the basis of the data before him he deems such action consistent with the protection of the public health, provisionally list a material as a color additive for any use for which it was listed, and for which a batch or batches of such material had been certified, under section 406(b), 504, or 604 of the basic Act prior to the enactment date, although such color was no longer listed and certifiable for such use under such sections on the day preceding the enactment date. Such provisional listing shall take effect on the date of publication.

(d)(1) The Secretary shall, by regulations issued or amended from time to time under this section—

(A) in so far as practicable promulgate and keep current a list or lists of the color additives, and of the particular uses thereof, which he finds are deemed provisionally listed under subsection (b), and the presence of a color additive on such a list with respect to a particular use shall, in any proceeding under the basic Act, be conclusive evidence that such provisional listing is in effect;

(B) provide for the provisional listing of the color additives and particular uses thereof specified in subsection (c);

(C) provide, with respect to particular uses for which color additives are or are deemed to be provisionally listed, such temporary tolerance limitations (including such limitations at zero level) and other conditions of use and labeling or packaging requirements, if any, as in his judgment are necessary to protect the public health pending listing under section 706 of the basic Act;

(D) provide for the certification of batches of such color additives (with or without diluents) for the uses for which they are so listed or deemed to be listed under this section, except that such an additive which is a color additive deemed provisionally listed under subsection (b)(2) of this section shall be deemed exempt from the requirement of such certification while not subject to a tolerance limitation; and

(E) provide for the termination of a provisional listing (or deemed provisional listing) of a color additive or particular use thereof forthwith whenever in his judgment such action is necessary to protect the public health.

(2)(A) Regulations under this section shall, from time to time, be issued, amended, or repealed by the Secretary without regard to the requirements of the basic Act, but for the purposes of the application of section 706(e) of the basic Act (relating to fees) and of determining the availability of appropriations of fees (and of advance deposits to cover fees), proceedings, regulations, and certifications under this section shall be deemed to be proceedings, regulations, and certifications under such section 706.

(B) On and after the enactment date, regulations, provisional listings, and certifications (or exemptions from certification) in effect under this section shall, for the purpose of determining whether an article is adulterated or misbranded within the meaning of the basic Act by reason of its being, bearing, or containing a color additive, have the same effect as would regulations, listings, and certifications (or exemptions from certification) under section 706 of the basic Act. A regulation, provisional listing or termination thereof, tolerance

limitation, or certification or exemption therefrom, under this section shall not be the basis for any presumption or inference in any proceeding under section 706 (b) or (c) of the basic Act.

(3) For the purpose of enabling the Secretary to carry out his functions under paragraph (1) (A) and (C) with respect to color additives deemed provisionally listed, he shall, as soon as practicable after enactment of this Act, afford by public notice a reasonable opportunity to interested persons to submit data relevant thereto. If the data so submitted or otherwise before him do not, in his judgment, establish a reliable basis for including such a color additive or particular use or uses thereof in a list or lists promulgated under paragraph (1), (A), or for determining the prevailing level or levels of use thereof prior to the enactment date with a view to prescribing a temporary tolerance or tolerances for such use or uses under paragraph (1) (C), the Secretary shall establish a temporary tolerance limitation at zero level for such use or uses until such time as he finds that it would not be inconsistent with the protection of the public health to increase or dispense with such temporary tolerance limitation.

EFFECT ON MEAT INSPECTION AND POULTRY PRODUCTS INSPECTION ACTS

SEC. 204. Nothing in this Act shall be construed to exempt any meat or meat food product or any person from any requirement imposed by or pursuant to the Meat Inspection Act of March 4, 1907, 34 Stat. 1260, as amended or extended (21 U.S.C. 71 et seq.), or the Poultry Products Inspection Act (21 U.S.C. 451 et seq.).

EXPLANATION OF PRINCIPAL FEATURES AND PURPOSES OF PROPOSED COLOR ADDITIVE AMENDMENTS OF 1959

The letter of transmittal briefly summarizes the general objectives of this legislative proposal, the principal reasons which gave rise to it, and previous amendments to the Federal Food, Drug, and Cosmetic Act which, in the case of food, show congressional endorsement of its key principle, i.e, recognition of the scientific soundness of considering the level and other conditions of use in determining the safety of a color additive. A fuller explanation is, however, necessary to an adequate understanding of the major provisions of the bill and their purposes against the background of existing law. In addition, a section-difference between so-called coal tar colors and others, see the discussion under "Major Changes Proposed.")

A. PRESENT LAW

Under present law, the treatment of color additives differs radically as between the so-called coal tar colors and others. (For explanation of the technical difference between so-called coal tar colors and others, se the discussion under "Major Changes Proposed".)

1. *Coal tar colors.*—The act requires the Secretary to provide by regulation for listing and certifying batches of "coal tar colors which are harmless and suitable for use" in food, drugs, or cosmetics; and a food, drug, or cosmetic (other than a hair dye) is deemed adulterated if it bears or contains a coal tar color other than from a certified batch (except that in the case of drugs this provision applies only where the coal tar color is used for coloring purposes only). (See secs. 402(c), 406(b); 501(a)(4), 504; 601(e), 604; and 701 (e) and (f) of the act.) Under these provisions, we are without power to admit a color to listing under tolerance limitations. *Flemming* v. *Florida Citrus Exchange,* 358 U.S. 153 (1958).

2. *Other colors.*—A coloring material not classified as a coal tar color is not subject to any pretesting, listing, or certification requirement in the case of cosmetics or drugs (except as pretesting may be required for a coloring component as an incident to official clearance of a new drug under the new drug provisions of the act).

On the other hand, with respect to their use in food, non-coal-tar coloring materials which are classed as "food additives" under the recent Food Additives Amendment of 1958 (Public Law 85–929) are subject to a requirement of official safety clearance, and to the establishment of tolerance limitations and other conditions of safe use where necessary for public health protection, except that colors which were in commercial use before January 1, 1958, are allowed a grace period for compliance; this period will expire not later than March 6,

1961. Such food additive colors, however, are not subject to any requirement of batch certification even if, in our view, this would be desirable for the protection of food processors and housewives using the color.

B. MAJOR CHANGES PROPOSED

The bill would change existing law in the following respects:

1. *Uniform criteria of admissibility.*—It would do away with the differences in legal requirements and treatment as between the so-called coal tar colors and other color additives, and would establish an integrated and internally consistent basis for determining the admissibility of any coloring material for use in or on foods, drugs, or cosmetics (other than hair dyes). This would be accomplished by excepting color additives (as defined in the bill) from the term "food additive"; repealing the present provisions for listing and certification of coal tar colors; enacting, as part of a single section (sec. 706), comprehensive provisions for the separate listing of any color additives suitable and safe for general or restricted use in foods, drugs, or cosmetics, and for their certification (or exemption from certification); and making other amendments to the act to mesh with these provisions.

The term "coal tar color" has been interpreted to apply not only to substances which are coal tar derivatives, but also to synthetic substances so related in their chemical structure to a coal tar constituent as to be capable of derivation therefrom even when not actually so derived. The present bill would embrace all color additives whether or not synthesized and whether or not capable of derivation from a coal tar constituent. From the point of view of determining safety of use, there is no sound scientific basis for distinguishing between a color additive extracted from a plant, animal, or mineral source and one which is synthesized with a chemical structure which will bring it under the term "coal tar color." The bill would therefore establish common ground rules for all such colors.

Doing away with the distinction between so-called coal tar colors and other coloring substances will have the incidental effect of establishing a pretesting and safety clearance requirement for the latter type of colors in the case of drugs or cosmetics. The lack of consumer protection inherent in the absence of such a requirement was forcefully brought to the attention of Congress by the investigations and recommendations of the House Select Committee to Investigate the Use of Chemicals in Foods and Cosmetics (Delaney committee) (see H. Rept. No. 2356, and H. Rept. No. 2182, 82d Cong.) and by the hearings culminating in the enactment of the Food Additives Amendment of 1958.

2. *Safety-of-use principle.*—The bill adopts for all colors, and for all color uses covered by it, the basic principle of the Food Additives Amendment of 1958, by providing for the official listing of color additives for any use in or on foods, drugs, or cosmetics, for which they are determined to be safe, subject to such conditions of use (including maximum tolerance limitations) as are determined to be necessary to assure the safety of such use.

3. *Comprehensive lists.*—The bill, however, retains the approach of the present coal tar color provisions in providing for comprehensive lists of colors, instead of attempting to carve out an exception from listing for colors "generally recognized" by experts as safe for use. While there may have been justification in the case of the Food Additives Amendment of 1958 for placing the burden on the Government to prove that an additive is not generally recognized as safe before the safety clearance procedure applies—in view of the broad sweep of the amendment, which otherwise would have covered such additives as salt, vinegar and natural spices—we do not believe that such an exception is sound in the case of color additives, whether they be extracted from a natural source of synthesized. To engraft such an exception on the bill would be retrogressive as compared with present law relating to coal tar colors. If a color is in fact generally recognized by competent experts as safe for unrestricted use in any kind of article, this can be readily established and reflected in regulations listing such color.

4. *Certification and exemptions from certification.*—While providing for certification of batches of listed colors, as existing law does for coal tar colors, the bill would permit the Secretary to grant exemptions from the requirement of certification where certification is not necessary to protect the public health. The present requirement of certification for coal tar colors is intended to assure food processors and housewives that the color is free from toxic impurities and otherwise complies with regulations refining the color's identity. We believe

however, that power to exempt colors from the certification requirement is desirable, especially since the coverage of the law is broadened to include all types of substances capable of imparting color.

5. *Effective date and transitional provisions.*—The amendments made by the bill to the Federal Food, Drug, and Cosmetic Act, i.e., title I of the bill, would become effective as soon as the bill is enacted.

However, in order to allow on an interim basis, for a reasonable period, the use of commercially established color additives to the extent consistent with the public health, pending completion of the scientific investigations needed as a basis for making determinations as to listing of such additives under the new permanent provisions of the bill, the bill provides for the provisional listing of such color additives, and their certification (or exemption from certification in certain cases). The "commercially established" color additives falling under these transitional provisions are (*a*) those coal tar colors of which a batch or batches were actually certified prior to the date of enactment of the bill, and (*b*) those non-coal-tar colors, and synthetic beta-carotene, which were commercially used or sold prior to that date for food, drug, or cosmetic use.

Provisional listings would be subject to appropriate temporary tolerance limitations and other conditions of use when deemed necessary for the protection of the public health during the period of provisional listing. The bill would permit establishment of a zero tolerance or removal from the provisional list at any time during this transitional period when the protection of the public health so requires.

A provisional listing would be automatic, except that in the case of a coal tar color which was "delisted" prior to the enactment date of the bill, the color could be provisionally listed under these transitional provisions only upon request to the Secretary.

In order to enable the Secretary to compile and promulgate a list of colors which are deemed provisionally listed without specific request to the Secretary, and in order to enable him to determine temporary tolerances for such colors, the Secretary would, after reasonable public notice for submission of data, be required, for the time being, to fix temporary tolerances at zero level with respect to those colors and uses thereof for which the data available to him do not establish a reliable basis for inclusion in a list of colors deemed provisionally listed and for determining the prevailing levels of use thereof prior to the enactment date.

In general, a provisional listing would terminate no later than the end of the 2½-year period beginning on the date of enactment. However, where necessary to complete the scientific testing required for a particular additive, the Secretary could extend this period with respect to a particular color additive or use, if this is consistent with the protection of the public health and with the objective of completing these tests as soon as practicable. Of course, a provisional listing of a color additive for any use, if not sooner terminated, would cease upon listing of the additive for such use under the permanent provisions of the bill.

C. NEED FOR THE BILL

The interests of consumer protection and of the food, drug, cosmetic, and color industries combine to make urgent the need for enactment of this bill.

1. Consumer protection

First: Under present law the Government has to perform extensive research to determine whether the colors now listed and being used are in fact harmless and suitable for use in food, drugs, and cosmetics. This testing may require up to 20 years. The bill would require industry to assume the burden of this testing, and would require the tests to be completed within 2½ years or, in individual cases, such additional testing period as is shown to be required and to be consistent with public health protection. Further, it would allow the Department to place safe tolerance limitations on the amount of color that may be used and the products on which it may be used during this transition period; the Department has no such authority under present law.

Second: Other important aspects of consumer protection afforded by the bill are (a) that the pretesting requirement would be extended to those non-coal-tar colors, especially those used in cosmetics and drugs, to which it does

not now apply, and (b) that the requirement of certification of batches of color, where necessary for the protection of the public health, would be extended to all colors.

Third: The use of color in foods, drugs, and cosmetics, though largely of value from the point of view of enhancing the marketability of the articles involved, is, in many cases, also in the consumer's interest and affirmatively desired by consumers. This is obviously so not only in the case of cosmetics, many of which are designed and purchased for the very purpose of imparting color, but also in the case of certain foods, e.g., margarine, where consumers demand artificial color. Housewives also frequently purchase certified color for use in home-prepared foods. In drugs, color additives are much used for ready identification, thus helping the pharmacist, the physician, the nurse, and the patient to avoid dangerous mistakes in choosing the wrong bottle or box. Thus, it is in the interest of the consumer that the law be changed so as to make available an adequate supply of colors of the safety of which, for particular uses, the consumer can be assured.

2. Commercial interests

The food, drug, cosmetic, and color industries find themselves in a serious situation as the result of the removal of color after color from the lists under the present inflexible provisions of the law. Unless the law, by permitting the listing of colors under safe tolerances, is brought into line with present-day methods of control, the emergency will grow and deepen, an emergency which, we believe, could be relieved for most established colors on a sound and permanent basis by enacting the provisions of this bill without in any way conflicting with the need for adequate protection of the public health.

There is no justification, from the point of view of the public interest, in driving either color manufacturers or food, drug, or cosmetic producers, dependent upon the use of color, out of business where the particular use of color involved is one which can safely be admitted under proper conditions of use (including tolerance limitations and certification requirements) established by this Department. Hence, while, as a consumer protection agency, we are concerned first and foremost with the protection of consumer interests, equity to the commercial interests concerned is also a factor in the submission of this proposal. It should, however, be stressed in this connection that we could not agree to a dilution or relaxation of the limitations of the carefully designed transitional provisions of this bill with respect to color additives which have heretofore been in commercial use.

The technical provisions and approach of this bill are summarized in detail in the section-by-section analysis enclosed herewith. Suffice it to say here that the bill includes, with necessary adaptations, the substantive safeguards for public health and consumer protection contained in the Food Additives Amendment of 1958 so recently considered and adopted by the Congress.

SECTION-BY-SECTION ANALYSIS OF "COLOR ADDITIVE AMENDMENTS OF 1959"

I. Introduction

Under existing law, so-called coal tar colors are regulated under the Federal Food, Drug, and Cosmetic Act through similar sets of provisions in chapters IV (food), V (drugs), and VI (cosmetics). Food containing a coal tar color is deemed adulterated by section 402(c) of the act unless the color is from a batch certified by the Secretary under section 406; section 406(b) then directs the Secretary to provide for listing coal tar colors that are harmless and suitable for use in food, and to provide for certifying batches of such colors. A drug containing a coal tar color solely for coloring purposes is deemed adulterated by section 501(a)(4) unless the color is from a batch certified by the Secretary under section 504; section 504 then directs the Secretary to provide for listing coal tar colors that are harmless and suitable for use in drugs for purposes of coloring only, and for certifying batches of such colors. A cosmetic (other than a hair dye (defined to exclude eyelash and eyebrow dyes)) containing a coal tar color is deemed adulterated by section 601(e) unless the color is from a batch certified by the Secretary under section 604; section 604 then directs

the Secretary to provide for listing coal tar colors that are harmless and suitable for use in cosmetics, and for certifying batches of such colors.

Food colors which are not coal tar colors are, when not generally recognized by experts as safe, regulated as "food additives" under the Food Additives Amendment of 1958 (Public Law 85-929). Under section 402(a)(2)(C) of the act, a food which is, bears, or contains a food additive is deemed adulterated if the additive is unsafe within the meaning of section 409; and under section 409, the food additive is deemed unsafe unless it and its use (or intended use) conform to a regulation under section 409 announcing the conditions under which the additive may be safely used.

The present bill takes color additives out of the scope of the Food Additives Amendment of 1958; repeals the present provisions for the listing and certification of "harmless" coal tar colors (sections 406(b), 504, and 604); enacts new, integrated provisions for the separate listing of suitable "color additives" safe for use in food, drugs, or cosmetics, under such conditions (including tolerance limitations) as the Secretary may find necessary to assure the safety of the uses permitted; provides for the certification (or exemption from certification) of listed color additives for such permitted uses; adapts the adulteration and other provisions of the act to the substantive and other changes involved in the above-mentioned changes; and contains transitional provisions for commercially established colors.

II. Sectional Analysis

TITLE I—AMENDMENTS TO FEDERAL FOOD, DRUG, AND COSMETIC ACT

SECTION 101

Amends section 201 (the definitional section) of the basic act as follows:

Section 101(a) of the bill redesignates section 201(s) of the basic act, defining the term "food additive," by excluding color additives from the term "food additive." While coal-tar colors are already, by implication, outside the scope of the operative provisions of the Food Additives Amendment of 1958 (Public Law 85-929), the express exclusion of "color additives" makes clear that, beginning with the date of enactment of this bill, all color additives (as defined in section 101(c) of the bill) will fall outside the scope of the provisions on food additives.

Section 101(b) of the bill redesignates section 201(t) of the basic act as section 201(u) and extends the definition of "safe" to apply to the use of that term in section 706 of the basic act as amended by section 103(b) of the bill.

Section 101(c) of the bill adds to section 201 of the basic act a new subsection (t), which defines the term "color additives" as any dye, pigment, or other substance, either synthetic or extracted or otherwise derived, which is capable of imparting color to a food, drug, cosmetic, or the human body, but excluding any material that the Secretary, by regulation, determines is used solely for noncoloring purposes. (Black, white, and intermediate grays are expressly included in the term "color.")

SECTION 102

Section 102(a). Paragraph (1) adds color additives to the exceptions from section 402(a)(2)(A) of the act, which now declares adulterated any food bearing or containing a poisonous or deleterious added substance which is unsafe within the meaning of section 406 of the act "except a pesticide chemical in or on a raw agricultural commodity and except a food additive." This paragraph of the bill makes explicit, with regard to color additives, the interpretation of the Supreme Court in *Flemming* v. *Florida Citrus Exchange*, 358 U.S. 153 (1958), that section 406(a) of existing law—which authorizes the establishment of tolerances for poisonous or deleterious substances added to food where the additive is required in the production of the food or cannot be avoided by good manufacturing practice—cannot serve as a basis for allowing the use of coal tar colors where marketability of a food depends on such coloring. Under the bill, section 706 of the act would (except during a transitional period) provide the exclusive procedure for the listing (with or without tolerance limitations) and certification of color additives.

Paragraph (2) amends section 402(c) to deem a food adulterated if "it is, or it bears or contains," a "color additive" which is "unsafe within the meaning of section 706(a)" of the basic act as enacted by the bill. This would replace

the present requirement of section 402(c) that deems adulterated a food bearing a coal tar color which is not from a batch certified under section 406(b), and the provisos to section 402(c) with respect to the use of color on oranges (see Public Law 86–2). (Section 406(b) of the act would be repealed under another section of the bill.) The effect of these changes would be to (a) make the new provisions applicable to all color additives, whether or not they are coal tar colors; (b) extend them to the color additive itself before being added to food; aand (c) use the technique of the Pesticide Chemicals Amendment and Food Additives Amendment by deeming the article adulterated if the additive is "unsafe" under another section (in this case the amended section 706) of the basic act which sets forth the criteria under which the additive shall be deemed unsafe.

Paragraph (3) adds to section 403 of the basic act a new subsection (l), whereby a food which is a color additive is deemed misbranded unless packaged and labeled in accordance with packaging and labeling requirements, if any, contained in regulations issued under section 706 (as amended by the bill). (Under the basic act's definition of "food," a color additive intended to be added to food is itself considered "food" before it is so added.)

Section 102(b). Paragraph (1) amends section 501(a)(4) of the basic act to deem adulaterated any drug containing a color additive solely for purposes of coloring, and any color additive which (with respect to its use in or on drugs) is intended solely for coloring purposes, if these are unsafe within the meaning of section 706(a) of the act. This would replace the present provision of section 501(a)(4), which deems a drug adulterated if it bears or contains, for purposes of coloring only, a coal tar color other than one from a batch that has been certified under section 504. (Section 504 of the act would be repealed by another section of the bill.)

Paragraph (2) adds to section 502 of the basic act a new subsection (m) deeming misbranded a drug which is a color additive the intended use of which in or on drugs is for the purpose of coloring only, unless its packaging and labeling are in conformity with packaging and labeling requirements, if any, contained in regulations issued under section 706. (A color additive is, under the definition of "drug" in the basic act, itself a drug when intended for use as a component of drugs.)

Section 102(c). Paragraph (1) amends section 601(e) of the basic act so as to deem adulterated a cosmetic (other than a hair dye) which is, bears, or contains a color additive which is unsafe within the meaning of section 706 of the act. This would replace the existing provision, which deems adulterated a cosmetic (other than a hair dye) which bears or contains a coal tar color other than one from a batch certified under section 604. (Section 604 of the act would be repealed by another section of the bill.)

Paragraph (2) adds to section 602 of the act a new subsection (e) so as to deem misbranded a cosmetic which is a color additive (except a color additive for hair dyes) not packaged and labeled in accordance with packaging and labeling requirements, if any, under section 706. (Under the definition of "cosmetic" in the basic act, a color additive which is intended for use as a component of cosmetics is itself considered a cosmetic.)

SECTION 103

Subsection (a) repeals those sections (sections 406(b), 504, and 604) of the basic act directing the Secretary to provide for listing, and certification of batches, of coal tar colors which are "harmless and suitable" for use in food, drugs, and cosmetics, respectively; it also repeals the references to these sections in section 701(e) of the act. The saving provisions of 1 U.S.C., section 109, will, of course, apply to these repeals.

Subsection (b) amends section 706 of the act to make more flexible and, incidentally, bring together within a single section of the act, the Secretary's rulemaking authority with respect to the use of color additives in or on food, drugs, or cosmetics. (Under present law, section 706 contains only a provision which conditions the admitting to listing and certification of coal tar colors upon the payment of fees. Cf. subsection (e) of section 706 as amended by the bill.) The major provisions of the proposed section 706 are:

Section 706(a)

The basic operative provision of the section, this subsection deems a color additive unsafe for a particular use (or intended use) in or on food, drugs, or

cosmetics, for the purposes of the application of sections 402(c), 501(a)(4), and 601(e), of the act as amended by the bill, unless the color additive is listed under section 706(b) and complies with the conditions of use prescribed by the regulations listing the additive, and unless the additive is from a batch certified pursuant to regulations under section 706(c) or is exempted from the requirement of such certification. The single exception to these requirements is an exemption, to be provided by regulation (under sec. 706(f)), for color additives intended solely for investigational use by qualified experts.

Where a color additive is used in accordance with the Secretay's regulations, it is also exempted from the general provisions that deem adulterated any food (sec. 402(a)(1)) or cosmetic (sec. 601(a)) bearing or containing a poisonous or deleterious substance that may render it injurious to health. This exempting provision does not apply to hair dye (other than eyebrow aand eyelash dye), since coal tar hair dyes are not covered by section 601(e) of the act.

Section 706(b)

Paragraph (1): The Secretary is required to establish separate lists of color additives for use in respect to food, drugs, and cosmetics, to the extent that the additives are safe for use when employed in accordance with the regulations listing them.

Paragraph (2): The listing of an additive may be for general use in respect to food, or drugs, or cosmetics, or it may be for a more limited use.

Paragraph (3): The regulations listing the color additive must, to the extent deemed necessary to assure safety of use, prescribe tolerance limitations, other directions relating to the manner of adding or using the additive, labeling or packaging requirements for such additive, and other conditions.

Paragraph (4): A color additive may be listed for use only where it affirmatively appears that the additive may safely be used under the conditions to be prescribed by regulation; and that there are practicable methods for analyzing its contents, and for determining the identity and quantity of such additive in or on any article of foods, drugs, or cosmetic, and of any substance formed in an article because of the use of the additive. (Cf. secs. 409(b)(2)(D) and 409(c)(3) of the act, relating to food additives.)

Paragraph (5): In determining whether the use of a color additive is safe, the Secretary is required to consider a broad range of factors. In particular, however, a color additive may not be listed if it has relevant carcinogenic potential. (This paragraph is modeled on sec. 409(c)(5) and the proviso to sec. 409(c)(3)(A) of the act, relating to food additives.)

Paragraph (6): The Secretary may not list a color additive for a proposed use, if that use would promote deception of the consumer or otherwise result in a misbranding or adulteration within the meaning of other provisions of the act. (A similar provision is contained in sec. 409(c)(3)(B) of the act, for food additives.)

Paragraph (7): If a tolerance limitation is required to assure safety, a color additive may not be listed unless the data establish that, if used within a safe tolerance, the additive will achieve the intended physical or other technical effect; and the permissible tolerance may be set no higher than the level necessary to accomplish this effect. This requirement is similar to that imposed on the Secretary by section 409(c)(4) of the act with respect to food additives.

Paragraph (8): Where, because of the aggregate quantity of a color additive (or pharmacologically related additives) likely to be involved, the Secretary cannot list the color (or colors) for all proposed uses, he may select among those uses or may apportion the aggregate allowable tolerance among them, subject to the paramount criterion of safety. For the purpose of such selection or allocation, the bill provides for taking into account, among other relevant factors, the marketability of an article as affected by color, and industry dependence on the color uses involved; the quantities of color consumption involved in the various color uses; and the availability of other colors.

Section 706(c)

Directors the Secretary to provide for the certification of batches of color additives, and for exemption from the requirement of certification where unnecessary in the interest of the public health. Under this subsection, the Secretary could provide for conditioning certification of batches of color additives on the keeping of records of disposal, as he does under existing law.

Section 706(d)

This subsection, in general, incorporates by reference the procedures of section 701(e)–(g) which now govern coal tar colors, except that it adopts the provisions as to "fair evaluation on the basis of the entire record" enacted by the Food Additives Amendment of 1958.

In discussing the provisions of the Food Additives Amendment of 1958 which the present bill incorporates by reference, Assistant Secretary Elliot L. Richardson, in a letter to the chairman of the House Committee on Interstate and Foreign Commerce, dated August 8, 1958, and reprinted in the Congressional Record, stated:

"The Secretary's action after hearing would have to be based upon a fair evaluation of the entire record at the hearing. On judicial review, the U.S. Court of Appeals would be required to sustain the findings of the Secretary if based upon a 'fair evaluation of the entire record at the hearing'; it would have to reverse the order of the Secretary if it is not 'based upon a fair evaluation of the entire record' or if it fails to include a statement setting forth in detail the findings and conclusions upon which the order is based. The 'fair evaluation' provision is quite acceptable to the Department, because it is the standard to which we are accustomed to adhere." (Congressional Record, 85th Cong., 2d sess., Aug. 13, 1958, p. 16016).

The "fair evaluation of the entire record" standard thus is to govern the action of the Secretary after hearing, and to be used as a criterion by the reviewing court in passing on the validity of the Secretary's action, not merely as respects findings of fact but as respects his action as a whole. It, in effect, extends to rulemaking the approach to judicial review of administrative adjudication taken in *Universal Camera Corporation* v. *N.L.R.B.*, 340 U.S. 474 (1951), and attempts to encapsule in a phrase the requirements of the Administrative Procedure Act as to fairness as opposed to arbitrariness, caprice, and abuse of discretion.

Section 706(e)

This subsection contains the fee provision (with the reference to coal-tar colors amended to refer to color additives) contained in Section 706 under existing law. Under the amended act fees for admitting a color to listing would necessarily include the cost of setting tolerance limitations authorized by Section 706(b).

Section 706(f)

The Secretary is required to provide, by regulation not subject to the above-mentioned procedure, for exempting from the operation of Section 706 any color additive or use thereof intended solely for investigational use by qualified experts, when such exemption is consistent with the public health. A similar exemption exists in Section 409(i) of the act for food additives.

SECTION 104

Extends section 301(j) of the basic act, which prohibits the revelation and the personal use of trade secrets acquired under the authority of various sections of the act (including sec. 409, relating to food additives), so as to include information obtained under the proposed Section 706.

SECTION 105

Contains appropriate changes of cross-references in, and other conforming amendments to, Sections 301(i) (false use of required marks), 303(c)(3) (guarantee that coal-tar color is certified), and 402(d) (non-nutritive substances in confectionery) of the basic act.

TITLE II—EFFECTIVE DATE, TRANSITIONAL PROVISIONS, AND EFFECT ON OTHER LAWS

SECTION 201

Defines, for the purposes of title II, the term "basic act" as the Federal Food, Drug, and Cosmetic Act; the term "enactment date" as the date of enactment of the bill; and other terms, insofar as also used in the basic act (whether before or after enactment of the bill) as having the same meaning as they have, or had when in effect, under the basic act.

SECTION 202

Makes the bill effective upon enactment, subject to the transitional provisions of Section 203.

SECTION 203

Subsection (a)(1) declares that this section is intended to make possible, for a reasonable interim period, through provisional listings, the continued use of commercially established color additives to the extent consistent with the public health, pending completion of the scientific tests needed as a basis for making determinations with respect to the definitive listing of such additives under the basic act.

Subsection (a)(1) also directs that a provisional listing (which, while in effect, has the same effect as a listing under sec. 706 of the basic act) shall, if not sooner terminated, expire (i) on the "closing date" or (ii) on the effective date of the additive's listing under section 706, whichever date first occurs.

Subsection (a)(2) defines "closing date" as the last day of the 2½-year period beginning on the enactment date, except that with respect to a particular provisional listing, the Secretary could postpone the original closing date for such period or periods as he finds necessary to carry out the declared purpose of this section, if consistent with the objective of completing in good faith, as soon as practicable, the necessary scientific tests needed to make a determination with respect to listing under section 706 of the basic act. Such postponements could be terminated if they should not have been granted, or on change of circumstances, on failure to submit required progress reports or meet other conditions.

Subsection (b): First, colors subject to those provisions of present law (sec. 406(b), 504, or 604, or the third proviso to sec. 402(c) which require the listing and certification of so-called coal-tar colors, are deemed provisionally listed for any use for which they were actually listed under these provisions on the day preceding the enactment date if a batch or batches of the color had been certified prior to that date. Second, a color additive which is either synthetic beta-carotene or which, on the date preceding the enactment date, was not within the purview of the so-called coal-tar provisions of the law, is deemed provisionally listed under the bill for any use of the color for which it was commercially used or sold prior to the enactment date. (It should be noted that the term "coal-tar color"—which under existing law is interpreted as including synthetic colors which, though not coal-tar derivatives, are so chemically structured as to be capable of being derived from coal tar—is not used in the bill. Synthetic beta-carotene is separately dealt with in the bill because its classification with coal-tar colors under existing law is in dispute and has been the subject of a hearing.)

Subsection (c) requires the Secretary, upon request, to list provisionally any color for any use for which it had been listed, and for which use a batch had actually been certified, under the above-mentioned coal-tar color provisions of existing law prior to the enactment date, although it was not so listed on the day preceding that date, if he deems such action consistent with protection of the public health.

Subsection (d)(1). The Secretary is directed, so far as practicable, (*a*) to promulgate and maintain current a list of color additives deemed provisionally listed, (*d*) to provide for provisional listing of color additives upon request in accordance with subsection (c), (*c*) to prescribe, if needed for public-health protection, temporary tolerance limitations (including zero tolerances) and other conditions of use for color additives provisionally listed, (*d*) to provide for the certification of batches of provisionally listed color additives (except that a color additive deemed provisionally listed under subsection (b)(2) shall be deemed exempt from certification while not subject to a tolerance); and (*e*) to provide for the termination of a provisional listing forthwith where necessary to protect the public health.

Subsection (d)(2). Regulations under this section are not subject to the procedural requirements of the Federal Food, Drug, and Cosmetic Act, but fees shall be charged (and be available for use) as though the regulations and other proceedings under this section had been under section 706 of the basic act as amended by the bill. On and after the starting date, provisional listing and certification under this section have the same effect as listing and certification

under section 706 for the purpose of determining whether an article is adulterated or misbranded, but provisional listings and other actions under section 203 of the bill shall not give rise to any presumption or inference in section 706 proceedings.

Subsection (d)(3). In order that the Secretary may be able to promulgate and keep current a list of color additives deemed to be provisionally listed and to prescribe temporary tolerance limitations and other conditions of use with respect to those additives, he is directed to afford by public notice a reasonable opportunity to interested persons to submit data relevant thereto. If the data submitted or otherwise before the Secretary do not reliably enable him to include a color in the published list of color additives deemed to be provisionally listed, or to ascertain the levels of use of such an additive prevailing prior to the enactment date, the Secretary is directed to fix a temporary zero tolerance for such colors or uses thereof until he deems a higher tolerance, or the absence of a tolerance limitation, consistent with the public interest.

SECTION 204

Makes clear that the bill, when enacted, would not relieve any meat or meat food product or any person from any requirement under the Meat Inspection Act of March 4, 1907, as amended or extended (21 U.S.C. 71 et seq.), or the Poultry Products Inspection Act (21 U.S.C. 451 et seq.).

Estimate of cost of enforcement of proposed Color Additive Amendments of 1959 as required by Public Law 801, 84th Cong.[1]

	Fiscal year—									
	1960		1961		1962		1963		1964	
	Man-years	Cost	Man-years	Cost	Man-years	Cost	Man-years	Cost	Man-years	Cost
Estimated maximum additional	59	$1,080,000	112	$886,900	112	$886,900	112	$886,900	112	$886,900
Man-years of civilian employment, by general categories of positions:										
Technical	4		8		8		8		8	
Scientific	25		47		47		47		47	
Inspectional	13		24		24		24		24	
Laboratory Aid	6		11		11		11		11	
Clerical	11		22		22		22		22	
Total	59		112		112		112		112	
01 Personal services		340,500		648,300		648,300		648,300		648,300
02 Travel		14,900		28,400		28,400		28,400		28,400
03 Transportation of things		9,200		2,900		2,900		2,900		2,900
04 Communication services		3,500		6,700		6,700		6,700		6,700
05 Rents and utility services		345,900		90,000		90,000		90,000		90,000
06 Printing and reproduction		3,600		6,900		6,900		6,900		6,900
07 Other contractual services		11,400		21,700		21,700		21,700		21,700
08 Supplies and materials		20,900		39,800		39,800		39,800		39,800
09 Equipment		308,800								
11 Grants, subsidies, and contributions		22,100		42,100		41,200		42,100		42,100
15 Taxes and assessments		100		100		100		100		100
Total estimate		1,080,000		886,900		886,900		886,900		886,900

[1] These estimates are in addition to fees to be collected for admitting color additives to listing and certifying batches thereof.

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington, D.C., August 10, 1959.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives,
House Office Building, Washington, D.C.

MY DEAR MR. CHAIRMAN: This is reply to your request of June 11, 1959, for a report from the Bureau of the Budget on H.R. 7624, a bill to protect the public health by amending the Federal Food, Drug, and Cosmetic Act so as to authorize the use of suitable color additives in or on foods, drugs, and cosmetics, in accordance with regulations prescribing the conditions (including maximum tolerances) under which additives may be safely used.

H.R. 7624 embodies the proposed legislation submitted to the Congress by the Department of Health, Education, and Welfare to establish safe tolerances for the use of color additives in foods, drugs, and cosmetics. The bill is patterned after the Food Additives Amendment of 1958 in which, after pretesting in accordance with controlled procedures, the amounts and conditions governing the safe use of food additives is established by regulation of the Secretary. Under the present law regulating the use of color additives, a given additive must be excluded from use if it is found to be harmful under any circumstances even though it may be quite safe if used in more minimal quantities or under certain specific circumstances.

The general purpose of the bill is to set aside the obsolete provisions now controlling the use of color additives and replace them with provisions which are more realistic and more scientifically sound. Accordingly, the Bureau of the Budget would have no objection to the enactment of H.R. 7624.

Sincerely yours,

(Signed) PHILLIP S. HUGHES,
Assistant Director for Legislative Reference.

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington, D.C., April 13, 1960.

Hon. OREN HARRIS,
Chairman, Committee of Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

MY DEAR MR. CHAIRMAN: This is in reply to your letter of March 30, 1960, regarding your committee's urgent interest in information on the position of the administration on H.R. 7624, the color additive amendment to the Food and Drug Act. You make specific reference to the so-called Delaney amendment.

In earlier testimony on the general subject of the Delaney amendment, the Secretary of Health, Education, and Welfare stated that in the present state of scientific knowledge, and unless otherwise required by law, he would not establish any tolerance for an additive which could enter the human diet if the substance had been found to cause cancer when fed to test animals. Since the Secretary's testimony, this matter has been intensively studied by the executive branch. These studies do not appear to provide the basis for any change at this time in the position expressed by the Secretary. This matter will, of course, be under continuous study, and if additional scientific evidence indicates that further relaxation of the Delaney amendment is desirable, it will of course be proposed.

The Delaney approach is unnecessarily stringent in one respect, however. Where an additive is used in animal food and leaves no residue in the animal after slaughter or in any food product and does not adversely affect the animal, there is no need to apply the proviso. The Secretary of Health, Education, and Welfare will submit language to modify the Delaney amendment in this regard in the near future.

It seems apparent that the Secretary of Health, Education, and Welfare would in any event have the authority to apply the principle of the Delaney amendment to color additives administratively. However, should the Congress desire to explicitly require such action, we see no objection to the procedure. We understand that representatives of the Departments of Health, Education, and Welfare

and Agriculture will be appearing further before your committee and can therefore provide the committee with more detailed information on this matter.

Our general comments on H.R. 7624 were presented to your committee in our letter of August 10, 1959.

Sincerely yours,

PHILLIP S. HUGHES,
Assistant Director for Legislative Reference.

DEPARTMENT OF AGRICULTURE,
Washington, D.C., August 11, 1959.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives.

DEAR CONGRESSMAN HARRIS: This is in reply to your request of June 11, for a report on H.R. 7624, a bill to protect the public health by amending the Federal Food, Drug, and Cosmetic Act so as to authorize the use of suitable color additives in or on foods, drugs, and cosmetics, in accordance with regulations prescribing the conditions (including maximum tolerances) under which such additives may be safely used.

This Department would have no objection to enactment of the proposed legislation. The proposed legislation would enable the Secretary of Health, Education, and Welfare to take a realistic position with respect to the use of colors in food products, many of which are agricultural products.

The bill would enable the Secretary of Health, Education, and Welfare to establish tolerance limitations and other conditions of safe use for all color additives in or on foods, drugs, and cosmetics, in a manner similar to that set forth in the Food Additives Amendment of 1958. Under existing law the said Secretary may not establish tolerance limitations for coal tar colors. A color additive would be deemed unsafe under the proposed bill if, among other things, it is found after tests which are appropriate for the evaluation of such additives to induce cancer in man or animals. The proposed legislation also contains a provision that its terms should not be construed to exempt any meat or meat food product or any person from any requirement imposed by or pursuant to the Meat Inspection Act or the Poultry Products Inspection Act. This provision is considered to be consistent with and in no way modifying the provisions of section 902(b) of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 392) which exempts meat and meat food products from the terms of that act to the extent of the application thereto of the Meat Inspection Act. Section 18 of the Poultry Products Inspection Act contains an exemption with respect to poultry and poultry products similar to that contained in section 902(b) of the Federal Food, Drug, and Cosmetic Act for meat and meat food products.

We believe that all dyes and colorings for use in or on foods, drugs, and cosmetics should be subject to the same principles presently applicable to food additives. The Secretary of Health, Education, and Welfare should be permitted to establish tolerances for these materials. Enactment of the proposed legislation will avoid such special legislation as that enacted recently permitting the addition of coloring to oranges (Public Law 86-2, approved Mar. 17, 1959).

The Bureau of the Budget advises that there is no objection to the submission of this report.

Sincerely yours,

E. L. PETERSON, *Acting Secretary.*

DEPARTMENT OF AGRICULTURE,
Washington, D.C., April 14, 1960.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives.

DEAR CONGRESSMAN HARRIS: This is to supplement the Department's statement of March 11, before your committee on H.R. 7624 and S. 2197. These bills proposed amendments to the Federal Food, Drug, and Cosmetic Act concerning color additives.

The Department, in its testimony, favored amending section 101 of Senate bill 2197 by adding before the period on line 10 of page 3 the following language:

"or any soil or plant nutrient or any material subject to registration under the Federal Insecticide, Fungicide, and Rodenticide Act."

Dr. Clarkson stated at that time that the language suggested was preliminary and that discussions were being held with representatives of the Department of Health, Education, and Welfare. As a result of these discussions, we are now revising our proposal by recommending that section 101 of S. 2197 be amended by adding a new paragraph 3 on page 3, as follows: "(3) Nothing in subparagraph (1) of this paragraph shall be construed to apply to any pesticide chemical, soil or plant nutrient, or other agricultural chemical solely because of its effect in aiding, retarding, or otherwise affecting, directly or indirectly, the growth or other natural physiological processes of produce of the soil and thereby affecting its color, whether before or after harvest."

I wish to thank you for the courtesies extended Dr. Clarkson in his appearance before your committee.

Sincerely yours,

E. L. PETERSON, *Assistant Secretary.*

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
August 7, 1959.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: We understand that representatives of some of the industries that would be affected by H.R. 7624 (to be known as the "color additive amendments of 1959") have suggested an amendment to the bill, relating to the requirements concerning analytical methods for color additives.

Under the bill in its present form (p. 9, lines 3–16), the proposed section 706(b)(4) of the Federal Food, Drug, and Cosmetic Act would preclude the Secretary from listing a color additive for any use in or on food, drugs, or cosmetics unless the data before him establish—

"(A) that such use, under the conditions of use to be specified in the regulations, will be safe;

"(B) that practicable methods of analysis exist for determining the quantity of the pure dye and all intermediates and other impurities contained in such color additive; and

"(C) that practicable methods exist for determining the identity and quantity (i) of such additive in or on any article of food, drug, or cosmetic, and (ii) of any substance formed in or on such article because of the use of such additive."

The proposed amendment suggested by industry representatives would consolidate the matter contained in the above-quoted paragraphs (B) and (C) and, with appropriate editorial revision, transfer it to section 706(b)(5), which begins on the same page and enumerates some of the most important factors which the Secretary must consider in passing on the safety of a proposed use of a color additive. As so amended, section 706(b)(4) and (5), beginning on page 9, line 3, and ending on page 10, line 10, of the bill, would read as follows:

"(4) The Secretary shall not list a color additive under this section for a proposed use unless the data before him establish that such use, under the conditions of use specified in the regulations, will be safe.

"(5)(A) In determining, for the purposes of this section, whether a proposed use of a color additive is safe, the Secretary shall consider, among other relevant factors—

"(i) the probable consumption of, or other relevant exposure from, the additive and of any substance formed in or on food, drugs, or cosmetics because of the use of the additive;

"(ii) the cumulative effect, if any, of such additive in the diet of man or animals, taking into account the same or any chemically or pharmacologically related substance or substances in such diet;

"(iii) safety factors which, in the opinion of experts qualified by scientific training and experience to evaluate the safety of color additives for the use or uses for which the additive is proposed to be listed, are generally recognized as appropriate for the use of animal experimentation data; and

"(iv) the availability of any needed practicable methods of analysis for determining the identity and quantity of (I) the pure dye and all intermediates and other impurities contained in such color additive,

(II) such additive in or on any article of food, drug, or cosmetic, and (III) any substance formed in or on such article because of the use of such additive."

The net effect of the change would be to require the Secretary to determine whether, with respect to particular color additives and proposed listings, all of the analytical methods described both in the original bill and in the proposed amendment are needed and, to the extent that they are, to refuse a listing unless these methods exist and are made available to him, whereas, under the bill as originaally introduced, the Secretary must refuse a listing unless all of the described methods of analyses are available to him, without regard to whether, with respect to a particular proposed listing of a color additive, such methods are in his judgment actually needed.

The proponents of the amendment believe that some of the requirements of the original bill, and in particular the requirement that there be practicable methods for determining the identity and quantity of any substance formed in or on food because of the use of a color additive, could not always be met in the present state of knowledge and that, in those cases in which there is no need for such a method of analysis for adequate public health protection, the requirement would unnecessarily bar the use of a color additive which would be perfectly safe.

The purpose of the requirement of the bill that there be practicable methods of analysis for determining the quantity of the pure dye and all intermediates and other impurities contained in a color additive is to enable the manufacturer of the color, and also this Department where we are asked to certify batches of color, to determine that the color in actual practice meets the requirements for purity and the definitional standards of our regulations, and to facilitate enforcement. The purpose of the other requirements as to available practicable methods of analysis is to make possible effective enforcement of any conditions or limitations that may be put on the listing of a color for use in foods, drugs, or cosmetics. We, of course, regard practicability and facility of enforcement as essential elements of safety in determining whether a proposed use of a color additive is safe within the meaning of the bill.

There are many circumstances where it would be necessary to have practicable analytical methods for all or most of the above-mentioned purposes. We can, however, visualize some situations in which these analytical methods, or some of them, would not be necessary for any of the purposes which we have mentioned and would thus not be essential in the interest of sound public health protection. We therefore recognize that in requiring such analytical methods to be available in all cases without regard to actual need the original bill goes further than absolutely necessary for public health protection.

Under the proposed change, we would consider ourselves bound to require those analytical methods specified in the bill for which, on the basis of our general knowledge or on the basis of the particular situation, we find that there is a need for the above-mentioned purposes, or otherwise in the interest of safeguarding the public health, and we would therefore feel bound to refuse to list a color where such needed methods are not available. At the same time, the proposed amendment would relieve us of the necessity of imposing these requirements where they are not needed.

We therefore would not object to the proposed change in the bill.

The Bureau of the Budget advises that it perceives no objection to the submission of this report to your committee.

Sincerely yours,

ELLIOT L. RICHARDSON,
Assistant Secretary.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
Washington, April 11, 1960.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: The purpose of this letter is to recommend a correction in the hearing provision in title I of the proposed Color Additive Amendments of 1959 (H.R. 7624 and S. 2197) now pending before your committee.

As drafted by this Department and submitted to Congress, and as contained in these bills, the hearing provision would, through an inadvertent cross-reference to the subsection on fees, provide for hearing and judicial review not only with respect to the issuance, amendment, or repeal of regulations relating to

the listing and certification of color additives, but also with respect to regulations establishing fees for such listing and certification.

Under present law as consistently interpreted by us since its enactment, the issuance or amendment of regulations establishing schedules of fees for the listing and certification of coal tar colors is not subject to hearing or judicial review (sec. 706 of Federal Food, Drug, and Cosmetic Act). This likewise holds true in the case of fees for certification services for insulin or antibiotics, fees for the pesticide regulation service, and fees for seafood inspection (secs. 408(o), 506, 507, 702A). The establishment of such fees is purely a matter of cost accounting and, since the services must be self-sustaining, the fees are automatically kept at the appropriate level through auditing of expenditures by the General Accounting Office. To provide for hearing and judicial review with respect to the establishment of fees would thus serve no useful purpose and, on the other hand, might cause delay which could seriously impede or make impossible the performance of the services in question.

We, therefore, recommend that the provisions of these bills be corrected by changing the phrase "subsections (b), (c), or (e) of this section" (H.R. 7624, p. 13, line 6; S. 2197, p. 13, line 9) to read "subsection (b) or (c) of this section."

Sincerely yours,

ARTHUR S. FLEMMING, *Secretary.*

The CHAIRMAN. The latest report from the Department of Health, Education, and Welfare in the form of a letter dated August 7, 1959, will be included with the original report.

The first witness we have is the Honorable Arthur S. Flemming, Secretary of the Department of Health, Education, and Welfare.

Mr. Secretary, we welcome you here this morning on this highly important legislation, and we will be glad to have your testimony.

STATEMENT OF HON. ARTHUR S. FLEMMING, SECRETARY OF HEALTH, EDUCATION, AND WELFARE; ACCOMPANIED BY C. BURROUGHS MIDER, M.D., ASSOCIATE DIRECTOR IN CHARGE OF RESEARCH, NATIONAL CANCER INSTITUTE, NATIONAL INSTITUTES OF HEALTH, PUBLIC HEALTH SERVICE; GEORGE P. LARRICK, COMMISSIONER, U.S. FOOD AND DRUG ADMINISTRATION; AND ROBERT A. FORSYTHE, ASSISTANT SECRETARY FOR LEGISLATION, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Secretary FLEMMING. Mr. Chairman and members of the committee, I am very happy to have this opportunity to discuss proposed legislation dealing with the use of colors in foods, drugs, and cosmetics.

This proposed legislation brings to the fore, it seems to me, certain basic issues bearing on the health of our people. It is appropriate for these issues to be reexamined periodically at a time when technological advances in diverse fields occur with such rapidity that it is difficult to keep pace with their impact on the health of all of us.

Because of the nature of the issues involved, I have called upon the total resources of the Department, and particularly those of the Food and Drug Administration and the U.S. Public Health Service, to work with me in the development of the positions which I will place before you this morning.

PROPOSED COLOR ADDITIVES AMENDMENT

As you have indicated, Mr. Chairman, there are two similar bills pending before the committee; namely, H.R. 7624, which was introduced at our request, and S. 2197, which had been introduced by Senator Hill on behalf of himself and Senator Goldwater.

H.R. 7624 embodies the legislative proposals submitted by the Department to the Congress on May 29, 1959. With your permission, Mr. Chairman, I should like to introduce into the record a copy of my letter to the Speaker transmitting the proposal, together with the enclosures explaining the principal features and details of the proposal.

The CHAIRMAN. It will be included with the report referred to a moment ago.

Secretary FLEMMING. Thank you, sir.

S. 2197, as originally introduced, was identical with H.R. 7624 and our proposal which we submitted, except that the Senate bill omitted the anticancer provision. As reported out of committee and passed by the Senate, S. 2197 also incorporates minor amendments to the bill which are acceptable to us. Thus, if the anticancer clause of the House bill were inserted in S. 2197, we would support it in that form.

The purpose of these bills is to provide a scientifically sound basis for listing the colors that may be safely used in foods, drugs, and cosmetics; and to provide for other safeguards in the use of such colors, including, where necessary, appropriate tolerance limitations on the amount of color that may be used. The bills also would provide for a continuation of the present system of certifying the safety of individual batches of the so-called coal tar colors and would extend this system, where necessary, to natural colors not now covered by the certification system. They would, on the other hand, permit us to exempt any listed color from the certification requirement where certification is not necessary for the protection of the public health.

When the present law was enacted in 1938, it was thought that its coal tar color provisions represented the ultimate in consumer protection. It provided for listing by the Food and Drug Administration of coal tar colors found to be "harmless and suitable for use" in foods, drugs, and cosmetics; and for the testing of every batch of the permitted colors in Food and Drug Administration laboratories before any color from the batch could be marketed for such use.

But experience with this law and advances in scientific knowledge regarding the testing of compounds for safety have shown that the consumer is not in fact receiving adequate protection.

The law as it stands arbitrarily divides all coal tar colors into two classes: Those that are considered "harmless" and which may be used without any limitation of the amount, and those considered not harmless and which may, therefore, not be used at all.

We now know that this arbitrary classification is not realistic—and that the amount of the color to be used must be taken into account in determining whether the use will be safe, except for cancer-producing agents, which I shall discuss later.

The crux of the matter with respect to the deficiency in consumer protection under the law as it now stands is simply this: While the coal tar colors now permitted were originally listed on the premise that they were "harmless," our own retesting program—using newer scientific knowledge—has shown this premise to be false with respect to most of the colors retested so far. This makes it probable that the premise will also prove to be false on many of the remaining colors.

Yet, under the present law, we must continue our tests and assume the burden of proving as to each listed color that it is not harmless before we can take that color off the permitted list.

It would take many years for the Food and Drug Administration to complete this testing of the coal tar colors now in use.

This burden, it seems to us, properly belongs on those who manufacture the colors, just as you have place a comparable burden under the food additives law on those who manufacture the food additives.

On the other side of the coin, however, is the fact that once we have shown a particular color to be not harmless, per se, we are obliged under the present law to remove this color from the permitted list, even though the amount of the color consumed under particular conditions of use would be completely safe. If the law is not changed, it, therefore, appears certain that many colors may have to be ruled out, even though they could be used without harm under proper restrictions.

The bill we have submitted provides that:

(1) The burden of proof of the safety of colors now in use and proposed for future use would be placed upon the manufacturer.

(2) Listing of a color for use would be forbidden if such use would promote consumer deception or would otherwise result in adulteration or misbranding in violation of the Federal Food, Drug, and Cosmetic Act.

(3) The Government would be authorized to take into consideration, in determining whether a proposed use is safe, the amount of color which would be used and the manner of use; and it would be empowered to set safe limits on the amount and conditions of use as necessary to protect the public health. We have no authority to set tolerances under the present law even though we find that the use of a color in specified amounts would not be harmful. If it is harmful to use a color in large amounts, it cannot be used at all.

We have recommended, however, that the law contain a provision that would prohibit the use of a color in any quantity if it is found by appropriate tests to cause cancer in either man or animal. At this point, therefore, I should like to discuss our reasons for believing that an anticancer proviso should be included in the color additives legislation.

THE BROAD ISSUE

In discussing this issue, I propose:

First, to describe in rather broad terms the environmental factors involved in considering this subject.

Second, to define the role of Government in the kind of situation we are discussing.

Third, to discuss the role of certain chemical and physical agents in relation to cancer.

Fourth, I am prepared to summarize the specific recent actions of the Department under the policy of the anticancer, or Delaney, clause of the Food Additives Amendment of 1958.

Our changing environment

Hippocrates, in the fourth century B.C., taught that man's health depended on his living in harmony with his external surroundings. And he used the word "physician" to indicate that every practitioner of medicine must "strive to know what man is in relation to food, drink, occupation, and which effect each of these has on the other."

Man has learned a great deal about how to modify his environment. The forward march of civilization reflects one success after another in his ceaseless effort to control, instead of being controlled by, the forces within him and the forces around him. It is to the external forces that affect man's total health that we refer when we speak of environmental health. These external forces may be biological, chemical, physical, or social. They are closely interrelated. And they have multiplied at an incredible rate as technological advances and population growth have had their impact throughout the world.

The complex of health problems posed by our rapidly changing environment is well known: Pollution of air and water by new and increasing quantities of chemicals—the new hazards of radioactivity—the spread of communicable disease by air transportation—the hazards of noise, other physical forces, and accidents—social and biological problems inherent in the development of large metropolitan complexes. These are typical of the problems that threaten us and can jeopardize our sustained progress if they remain unchecked.

Man adapts to some aspects of this complex external environment. Other aspects he changes to meet his needs. In changing the environment for one purpose, however, he may knowingly or unknowingly create new hazards to his health. Technological advances have reduced some health hazards, intensified others, and introduced some entirely new ones. Many of these, man cannot adapt to. His only recourse is to control his environment. Water and air, food, wastes, insects, and rodents are among the channels through which man's health may be endangered. Controls directed at these vehicles may eliminate or reduce not only known hazards, but unknown or little understood ones as well.

Thus we see that the manmade hazards to man's health are growing. A characteristic of the hazards of the external environment is that large numbers of people may be affected, and particularly by the total or cumulative effects of external forces, such as, for example, chemicals or radioactivity, over long periods of time.

THE ROLE OF GOVERNMENT

Next I would like to address myself to the role of Government in this type of situation.

When the question arises as to whether limitations shall be placed on the fruits of technology for the protection of the people, the concept of Government acting to protect the public interest meets one of its sternest tests.

This is a simple, straightforward matter when there is incontrovertible scientific evidence that a control measure is necessary and warranted.

It is when this situation does not obtain—when there is not incontrovertible proof that a health hazard does exist but ample reason to think that it may—that the issues are joined.

Here, it seems to me, are the guidelines for action that under such circumstances, government must follow:

First, it must make an objective appraisal of the issue. It must seek out all the facts, assess them, and determine where the weight of scientific evidence lies.

Second, on the basis of the evidence, it must pursue a course of action which best reflects the public interest.

Third, it must maintain and demonstrate its respect for the point of view of others. In choosing its course of action, the Government has made a judgment. It must stand ready to modify that judgment if new evidence is obtained that warrants change.

Fourth, in all of these actions, once a decision is reached, it should be made public and the reasons for the decision explained.

But there is one thing that a responsible government cannot do. It cannot fail to place at the top of its list of priorities the health of all of the people even though by so doing it may be or may appear to be acting against the economic interests of a segment of our society.

The Government's paramount obligation to act in the interest of the health and safety of the people in administration of the food and drug laws was ably set forth by Justice Frankfurter of the Supreme Court in 1943. Speaking for the Court (*United States* v. *Dotterweich*, 320 U.S. 277), Justice Frankfurter said:

> The Food and Drugs Act of 1906 was an exertion by Congress of its power to keep impure and adulterated food and drugs out of the channels of commerce. By the act of 1938, Congress extended the range of its control over illicit and noxious articles and stiffened the penalties for disobedience. The purposes of this legislation thus touch phases of the lives and health of people which, in the circumstances of modern industrialism, *are largely beyond self-protection* (emphasis supplied). Regard for these purposes should infuse construction of the legislation if it is to be treated as a working instrument of government and not merely as a collection of English words.

Justice Douglas, also of the Supreme Court, speaking for the Court (*Kordel* v. *United States*, 335 U.S. 345) in a later case also involving the interpretation of food and drug laws underlined the same paramount obligation of government when he said:

> The high purpose of the act is to protect consumers who under present conditions are largely unable to protect themselves in this field * * *.

Judge Hastie of the third circuit court of appeals identified the high standard to which government must adhere in discharging this paramount obligation. In speaking for that court in 1952 (*Atlas Powder Company* v. *Federal Security Administrator*, 201 F.(2d) 347), he said:

> One making a rule for the future which in practical effect will determine whether millions of people shall eat something every day may reasonably refuse to subject the general public to even slight risks and small deceptions. In these circumstances the fact that administrative action has been dominated by great caution but serves to emphasize the reasonableness of the Administrator's conduct.

It seems to me that what these distinguished jurists have said in preparing opinions for their respective courts constitutes a sound restatement of Abraham Lincoln's conviction that the legitimate object of government is

> to do for the people what needs to be done, but which they cannot, by individual effort, do at all, or do so well, for themselves.

And it is in the light of this concept of what seems to me to be the sound role of government that I believe we should consider the situation that confronts us today in the field of cancer.

Carcinogenesis in animals and man

In framing laws relating to the problem of cancer-causing substances in the environment and in carrying out administrative pro-

grams under these laws, the legislative and executive branches of Government are dealing with a disease that is a major killer.

There are many unknowns about cancer that are yet to be solved by medical research. But we do know that today cancer is second only to heart disease as a cause of death among the American people.

We know that every year, approximately 250,000 people die of cancer in this country. We know that approximately 450,000 new cases of cancer are discovered each year. And we know that at any given time, about 700,000 persons are under treatment for cancer.

We have on the one hand sobering facts. On the other hand, we also have this sobering evidence: Scientific inquiry into the incidence of cancer among certain specialized groups has been traced in several instances to specific substances involved in their environment. And laboratory experiments have shown that a number of substances when added to the diet of test animals have produced cancers of various kinds in the test animals.

It is this latter fact, the incontrovertible evidence that small quantities of certain materials over a period of time will cause abnormal cell growth in animals, that gave rise to the Delaney or anticancer provision in the food additives amendment of the Federal Food, Drugs, and Cosmetic Act.

Early identification of carcinogens

I consider the known scientific evidence bearing on the causation of cancer to be of such importance in considering the anticancer provision that I asked the National Cancer Institute, which, as you know, is a part of the National Institutes of Health of the Pubic Health Service, to develop a statement summarizing scientific knowledge in this field. The Associate Director for Intramural Research of the National Cancer Institute, Dr. G. Burroughs Mider, in consultation with other members of the Institute staff, developed a careful and detailed statement which traces the key facts that have been illuminated by scientific study.

Mr. Chairman, I have this complete study with me. I would like to request the inclusion of the full document in the record, but then I would like to read as a part of my statement a summary of the document which was prepared by Dr. Mider. Personally I feel that this constitutes a very important contribution on the part of Dr. Mider and his associates of the National Cancer Institute to an understanding of this very important problem.

Copies of this are also available for members of the committee.

The CHAIRMAN. That will be received at this time and we will be glad to look it over and determine whether to include it in toto for the record, or have it in the files for the benefit and information of the committee.

Secretary FLEMMING. Thank you, Mr. Chairman.

The summary to which I referred is as follows—I would like to make it clear, as I think that the document does, that this summary was prepared for me by Dr. Mider, and I am now quoting from the summary:

THE STUDY OF AGENTS CARCINOGENIC TO MAN

A carcinogen may be defined as any agent that increases the risk of cancer to any population. Among the well-defined carcinogens that affect man are: ultraviolet rays, ionizing radiation, sodium or potassium arsenite, and three aromatic amines.

Sailors, farmers, and others whose occupations have required protracted exposure to sunlight have long been recognized as having a greater frequency of skin cancer than occurs in the general population. By 1910 the concept of sunlight as a cause of cancer of the skin was widely accepted by dermatologists. Several investigators have produced cancers of the skin of animals by exposure to ultraviolet rays, a major component of solar radiation.

Dr. Harold F. Blum, physiologist with the National Cancer Institute and visiting professor of biology at Princeton University, reporting on his precise studies with ultraviolet irradiation, emphasized that cancerization is in some way cumulative—if dosage is stopped, development continues at a retarded pace but steps up with renewal of dosage.

The ability of X-rays to produce cancers of the skin, leukemias, and highly malignant tumors of bone in man is well established.

Ingestion of the radioactive chemical, mesothorium, has caused bone cancers in watch-dial painters, and injection of the radioactive chemical, thorium dioxide, in man has been followed years later by malignant tumors of the liver and spleen.

The occurrence of tumors of the urinary bladder was reported among workers in the German coal-tar dye industry in 1895. Many different compounds were suspected, but in 1938 Dr. W. C. Hueper, head of the Environmental Cancer Section of the National Cancer Institute, reported similar tumors in dogs after prolonged, i.e., 2 years, injection and ingestion of an important dye intermediate, beta-naphthylamine. The evidence of carcinogenic hazard from this agent has been so impressive that it is no longer produced in Great Britain or Germany, and its production has decreased in the United States.

Moving from the specific to the general, it may be emphasized that:

1. Cancer can be caused by extraneous agents.
2. Not all members of the exposed population are expected to develop cancer, but those more susceptible to cancer production cannot be identified except by experience.
3. Even a powerful carcinogen requires weeks or months to elicit cancer in mice or rats and probably requires years in man.
4. No change need be recognizable in the organ or tissue destined to become cancerous before the cancer itself appears.

EXPERIMENTAL EVIDENCE IN IMPLICATING AND UNDERSTANDING CARCINOGENS

It becomes necessary to assay the degree of risk produced by uncontrolled and uncontrollable use of chemicals known only to produce cancer in laboratory species. Some considerations of the significance of findings among laboratory animals in relation to human experience are as follows:

1. Experience in the laboratory does not predict unequivocally the reaction of humans to the same agent, be it carcinogenic or otherwise. On the other hand, those few pure chemical and physical agents known to produce cancer in man, with the possible exception of inorganic arsenical compounds, have elicited cancers in animals.
2. The route of administration affects the carcinogenic property.
3. No one at this time can tell how much or how little of a carcinogen would be required to produce cancer in any human being, or how long it would take the cancer to develop.
4. The effect of certain chemical carcinogens can be markedly increased by other compounds with little or no carcinogenic power.

Also, the accumulated evidence suggests the irreversibility of the cancerous response once it has been initiated and further suggests a cumulative effect.

THE IMPORTANCE OF STUDYING WEAK CARCINOGENS

Thus far, this discussion has concerned principally the highly potent carcinogens; yet the weaker ones are equally if not more important. The most potent carcinogens by their very strength are almost sure to be discovered clinically. It is assuredly the less potent carcinogens that seem most important in human cancer and provide the real problem for evaluation. A major objective of experimental carcinogenesis is therefore the bioassay for the presence of weak carcinogens.

CLASSIFYING AGENTS AS POTENTIALLY HAZARDOUS

While chemical configuration alone cannot be used to predict the ability of a new compound to produce cancer, possession of a common biological effect known

to be associated with a particular type of cancer production may be of the utmost importance. Three examples may be cited:

1. Female sex hormones known as estrogens are formed in the bodies of most mammals. Administration of synthetic or naturally occurring estrogens has increased the incidence of mammary and other tumors in susceptible animals of various species.

2. The discovery of specific, potent, and useful drugs that interfere with thyroid function has stemmed from the basic observation that ingestion of certain foodstuffs in large amounts increased the size of the thyroid in some experimental animals. Moreover, certain goiter-inducing drugs, such as thiourea, will produce cancers of the thyroid when fed for prolonged periods to mice or rats. No information exists on the carcinogenic properties of natural goitrogens, but it would not be surprising if they too produced cancer after adequate and prolonged ingestion.

3. A chemical compound which by itself produces cirrhosis of the liver might will produce cancer of that organ.

FOOD ADDITIVES AND CONTAMINANTS AS POSSIBLE CARCINOGENS

A symposium on the potential cancer hazards from chemical additives and contaminants to foodstuffs was held in Rome, August 10–15, 1956, under the auspices of the International Union Against Cancer. The participants, representing many countries, included distinguished scientists particularly experienced in research on the causation of cancer. They viewed the problem as a global one. Their resolutions refer to "general problems, biological experimental methods, purity standards and analytical methods, and special problems" such as food dyes and food contaminants. Their general conclusion follows:

"The conference recommends that, as a basis for active cancer prevention, the proper authorities of various countries promulgate and exact adequate rules and regulations prohibiting the addition to food of substances having potential carcinogenicity."

An even more cogent discussion—Problems in the Evalution of Carcinogenic Hazard From Use of Food Additives—is contained in the prepublication issue of a report by the Subcommittee on Carcinogenesis of the Food Protection Committee, National Academy of Sciences-National Research Council. The concluding paragraph reads:

"Because of the vagueness of present knowledge concerning quantitative aspects of the carcinogenic process, use of any amount of a carcinogen as a food additive probably is justified only if (1) values to the public are such that banning the use would constitute an important loss or hardship, and (2) there is no reasonably good noncarcinogenic alternative."

(The full prepared report on "The Role of Certain Chemical and Physical Agents in the Causation of Cancers" by G. Burroughs Mider, M.D., is as follows:)

THE ROLE OF CERTAIN CHEMICAL AND PHYSICAL AGENTS IN THE CAUSATION OF CANCERS

(By G. Burroughs Mider, M.D., Associate Director in Charge of Research, National Cancer Institute, National Institutes of Health, Public Health Service, Department of Health, Education, and Welfare)

(Prepared at the request of the Secretary of Health, Education, and Welfare as part of his testimony before the Committee on Interstate and Foreign Commerce, House of Representatives (86th Cong., 2d sess.) on H.R. 7624 and S. 2197, January 26, 1960)

Research into the causation of cancer had its inception almost 200 years ago when the eminent British surgeon, Mr. Percivall Pott, described an extraordinary frequency of cancers of the scrotum among chimney sweeps which he related to their intimate and continuing contact with soot. A posthumous edition of his "Chirurgical Works," liberally annotated by Sir James Earle, included two extremely important observations:

1. Soot cancers occurred on other parts of the body than the scrotum.
2. Not all persons continuously exposed to soot developed cancers.

Cancer, then, could be caused by external influences which would not necessarily produce the lesion in all members of the population at risk.

CAUSES OF CANCER IN MAN

Other agents were identified which increased the risk to one or another specific kinds of cancers. Most of them were mixtures often associated with particular occupations, but sunlight was suspected of causing cancer of the skin long before experimentalists were able to produce cancers in laboratory species with mixtures or with pure chemical compounds. X-rays, in fact, were known to produce cancer of the skin before any other discretely definable agent was shown to have similar properties. Probably the first pure chemical suspected of eliciting cancers in man was potassium arsenite given as Fowler's solution to patients suffering from chronic dermatoses such as dermatitis herpetiformis and psoriasis. These people, benefiting from the medicine prescribed by their physicians, indulged in self-medication far beyond the period deemed prudent by competent medical authorities. Thus, our knowledge of the causation of cancer came from clinical observations by individual physicians who recognized a peculiar distribution of disease among their patients that could be related to some peculiarity of environment or habit.

SCIENTIFIC APPROACHES

Scientists, of course, were anxious to identify the specific causative factors responsible for the production of cancer and seized upon the observations of Mr. Pott as one point of departure for their experiments. Many attempts to produce cancers with tars and soots or extracts made from those mixtures failed until two Japanese scientists reported in 1915 the induction of cancers on the ears of rabbits which had been painted with extracts of tars for long periods of time. A complex study of fractions of tar extracts in relation to their cancer-producing properties was guided by association of a particular measurable fluorescence with the ability of a fraction to elicit cancerous responses, as pioneered by British investigators. The fluorescence spectrum of dibenz [a, h] anthracene was quite similar to that emitted by cancer-producing tax extracts; consequently it was tested in mice by Kennaway in 1930 and proved to be the first pure chemical that produced cancer under experimental conditions. Dibenz[a,h]anthracene is a polycyclic aromatic hydrocarbon and the knowledge of its important biological property permitted isolation of benz[a]pyrene from the potent tar extracts. To date, it is the only substance known to occur in tars which has the power to produce cancer.

Chemically similar substances are abundant in nature and include steroid hormones, some of which were soon implicated in the production of mammary cancers in mice through the brilliant researches of Lacassagne. Scientists directed their attention to search for other chemicals which might produce cancers in experimental animals in the hope that such compounds might share common chemical or physical properties that could be correlated with their ability to elicit cancers. They were unusually successful in their search for cancer-producing chemicals. Most of these were products of the chemist's test tube, but some were explored because of their relation to events suspected of causing cancer in man. The list of chemical compounds which will elicit cancer in one or more species of experimental animals is long, and growing longer each year. It contains inorganic compounds and organic chemicals of both major classes—aliphatic and aromatic. Structurally related groups of compounds contain some which do and some which do not produce cancer. While some characteristics of internal structure, such as electron density in specific regions of the cancer-producing cyclopentenophenanthrenes which elicit cancerous responses, may be associated with that property, no generalization concerning relation of chemical structure to biological activity, is warranted other than to emphasize the absence of such correlation. Nor is the power to elicit cancer the exclusive prerogative of chemicals, since ultraviolet and ionizing radiations as well as microbiological entities have similar properties.

Test animals

Scientific testing of agents for cancer-producing potency had been rather unsatisfactory because responses were so erratic that quantification was practically impossible except for the most powerful agents. Interested geneticists pointed to the use of genetically controlled subjects as a means of improving greatly the uniformity and consistency of response. The tools immediately available were various strains of mice, inbred by brother to sister mating for 20 to 40 generations, theoretically as alike as identical twins but actually somewhat less so.

The use of inbred strains may be compared to a situation in which one is able to work over and over again on the same individual or his very close relative. Other animal species have not been neglected and, indeed, the general success in studying quantitative biology in the mouse has led to the production of inbred rats and guinea pigs and an approach to the difficult problems of raising inbred rabbits. Just as the inbred strains of experimental animals may vary widely in their susceptibility to cancer production by a given agent, so do genetically mixed or heterogeneous populations of the same species. The same is true of a number of infections, including tuberculosis, and drug action may vary considerably from individual to individual, strain to strain, or species to species. Were there not some degree of variation in susceptibility to disease, the human race should have disappeared during the great pandemics of plague that ravaged the world centuries ago.

LABORATORY FINDINGS SUPPORT CLINICAL OBSERVATIONS

Perhaps the most important fact to emerge from the study of the causation of cancer during the past 30 years is the support that laboratory experience has given for the principles established from the study of human cancer. With the possible exception of arsenical compounds, every chemical compound of physical agent known to produce cancer in man has produced cancer in one or more species of experimental animal, though not necessarily in the same site. Most of the mixtures which reasonable people have implicated in the causation of human cancers have likewise produced cancers under laboratory conditions.

PURE CHEMICAL AND PHYSICAL CARCINOGENS

A carcinogen may be defined as any agent that increases the risk to cancer of any population. It is the simplest and most inclusive definition possible, and many of the most sophisticated cancer experts might properly view it as too broad. It will serve the purpose, however, of illustrating some of the complexities of cancer production learned from experience. Let us first consider what has been learned about the known carcinogens that affect man:

1. Ultraviolet rays.
2. Ionizing radiations, principally X-rays but emanations from naturally occurring or artificially produced radioactive isotopes as well.
3. Potassium arsenite as Fowler's solution, and perhaps other trivalent arsenical compounds.
4. A small group of aromatic amines: β-naphthylamine, benzidine, and 4-aminodiphenyl.

CANCER AND SUNLIGHT

Sailors, farmers, and others whose occupations have required protracted exposure to sunlight, have long been recognized as having a greater frequency of skin cancer than occurs in the general population. Dubreuilh was the first to study the problem systematically, at about the turn of the century. His idea was adopted by oher physicians, so that by 1910 the concept of sunlight as a cause of cancer of the skin was widely accepted by dermatologists. Although the evidence accumulated during the intervening years from clinical studies alone may be purely circumstantial, other data acquired from experimental and other fields form various parts of a picture which have been brought together in a satisfactory manner to make a composite whole.

EXPERIMENTAL ULTRAVIOLET CANCER

Findlay was the first to produce experimental cancers of the skin by exposure to ultraviolet rays, a major component of solar radiation. His first report in 1928 was followed rapidly by confirmatory studies conducted in widely separate parts of the world. Blum and his colleagues initiated a series of precise quantitative studies of ultraviolet carcinogenesis in the mouse during 1940 which are summarized in his recent work "Carcinogenesis by Ultraviolet Light." The wavelength dependence of the cancerous response has never been precisely defined. Penetration of ultraviolet light into mouse skin, however, is much greater than into human skin. A great deal passes through the thin upper layers of cells in the skin, the epidermis, into the connective tissues of the corium where sarcomas are produced. Virtually none of the carcinogenic wavelengths pass through the epidermis in man, so that the cancers arising from ultraviolet irradi-

ation in man are characteristically derived from epidermal epithelial cells. The ability of ultraviolet to pass into the corium in the mouse and rat accounts in all probability for the high proportion of connective tissue sarcomas found in mice and rats, though these species do form some cancers microscopically comparable to human ultraviolet cancers.

Dose-response relationships

Blum's studies are probably the most precise that have ever been carried out on any carcinogenic agent and include descriptions of dose-response relationships. He has summarized his findings as follows:[1]

"* * * By treating the quantitative description as empirical, one may arrive at certain conclusions regarding this kind of carcinogenesis.

"It seems clear that whatever the process of cancerization, it is continuous throughout the whole of the development of the cancer and cannot be separated into distinct periods.

"Cancerization is in someway cumulative—if dosage is stopped, development continues at a retarded pace but steps up with renewal of dosage.

"Although there is evidence of a small degree of recovery, this is slight in overall effect, and carcinogenesis may be regarded as essentially irreversible.

"Since there is recovery—and we may take particular account of this in the failure of reciprocity at very low dose rates—it seems necessary to conclude that there is a threshold dosage at which recovery just balances cancerization. But this threshold is certainly very low, and is not directly measurable because of the limited lifetime of the animals. Thus in any practical sense, carcinogenesis by ultraviolet light may be considered as essentially nonthreshold."

Individual susceptibility

This important information does not tell us why all persons exposed to intense sunlight do not develop cancers on the exposed surfaces. Cancer of the skin in white residents of the United States shows a marked latitudinal distribution, being much higher in the South than in the North, as could be expected if the incidence followed a strong north-south distribution of sunlight. Most other cancers show no such tendency, nor does cancer of the skin in Negroes. These data and other considerations lead to the proposition that intensity of skin pigmentation as determined by heritable factors is inversely related to susceptibility to ultraviolet cancer of the skin. It is commonly held that people with fair complexions are more susceptible to this type of cancer, and, indeed, the utmost in susceptibility is found in a small group of persons with xeroderma pigmentosum. These unfortunate people develop cancers of the skin during childhood and, in contrast to most people whose sunlight cancers appear much later, seldom live to adult life. While Blum regards this condition as an hereditary cancer in which ultraviolet radiation plays only a minor role, the concensus tends to consider xeroderma pigmentosum as a genetically determined predisposition to the formation of multiple actinic cancers. Thus, the human population exhibits a wide spectrum of sensitivity and resistance to the carcinogenic action of ultraviolet light.

CANCERS PRODUCED BY IONIZING RADIATIONS

The ability of X-rays to produce cancers of the skin, leukemias, or lymphosarcomas and highly malignant tumors of bone in man, is accepted. Dose-response relationships are obscure, but a considerable variation in the ability of a given dose of X-irradiation to cause reddening of the skin and, for that matter, to produce X-ray burns has long been recognized. During recent years an inordinately large proportion of children suffering from cancers of the thyroid gland has been found to have a history of irradiation delivered some years earlier to the general area of the head and neck or upper thorax, usually given to reduce the size of the thymus gland. No adequate study of the true incidence of thyroid cancers in irradiated and unirradiated children has been reported, so that the suspected cause and effect relationship can be neither affirmed nor denied with complete scientific objectivity, though the inference is strong indeed.

Ingestion of mesothorium has caused osteogenic sarcoma in watch-dial painters. Injection of thorium dioxide as thorotrast has been followed years later by the appearance of peculiar malignant tumors of the liver and spleen.

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[1] From Harold F. Blum, Ph. D., "Carcinogenesis by Ultraviolet Light," Princeton, N.J., Princeton University Press, 1959. Dr. Blum is physiologist with the National Cancer Institute, National Institutes of Health, Public Health Service, and is presently visiting professor of biology at Princeton University.

Dose-response relationships

A wealth of experimental data confirms the qualitative effects of ionizing radiations described in man as equally significant for laboratory species. Quantitative aspects of the research have been argued intensely in scientific circles and even before legislative committees. It will serve no useful purpose to delve into the experimental details. The argument of those who have studied the biological effects of ionizing radiations in populations of fruit flies points to increases in the mutation rate as a direct function of dose of ionizing radiations, the curve passing through the origin. These scientists seem to regard cancer as a mutation and propose that any increase in mutation rate will increase the frequency of cancer, especially lukemia. The mammalian experimentalist unable to study the extraordinarily large numbers of mice that would be needed to fill in the bottom part of the curve can find doses of ionizing radiations which do not seem to increase the risk of leukemia and other cancers to a statistically significant degree. He may propose that some threshold must be reached before X-rays or their equivalents will cause cancer. These scientists would have little difficulty in detecting an effect that increased the incidence of a specific type of cancer by as much as 10 percent, but they might find it extremely hard to establish a significant difference at the 1 percent level. The techniques are known, but the cost is terribly high and the information may or may not be worth the effort. Precisely the same problem is pertinent to studies of chemical carcinogens.

ARSENICAL CANCERS

Some of the reasons for implicating certain arsenical compounds in production of cancer in man have been cited above and will not be repeated here. The use of arsenical sprays as pesticides is alleged to have produced cancers of the skin, and a series of papers in the German literature has implicated arsenicals in production of cancers arising in the liver and the lungs. These problems are extremely complex, and an all-inclusive judgment is impossible on the basis of known facts. Certainly the number of occupational cancers of the skin considered to have been caused by arsenicals is far less than the numerous cases of chronic arsenicism unrelated to cancerous changes.

AROMATIC AMINE CANCERS

Rehn reported the occurrence of neoplasms of the urinary bladder among workers in the German coal tar dye industry during 1895.

β-naphthylamine

Many different compounds were suspected of causing these tumors, but in 1938 Hueper, Wiley, and Wolfe described the appearance of similar tumors in dogs after injection and ingestion of the important dye intermediate β-naphthylamine for approximately 2 years. British workers had attempted unsuccessfully to produce cancers in mice, rates, and guinea pigs with this same compound. Extensive research conducted by Bonser and coworkers indicates that a simple chemical change in the molecule occurs within the body and the resulting compound is carcinogenic when excreted into the urine. The relative abilities of various species to produce the chemical transformation correlates well with the production of bladder tumors in the species by feeding β-naphthylamine. Man, dog, and rabbit, unfortunately, excrete greater amounts of the metabolite than do other species studied, hence develop bladder neoplasms most readily. The evidence of carcinogenic hazard from β-naphthylamine has been so impressive that it is no longer produced in Great Britain or West Germany, and its production has decreased in the United States.

Benzidine

Elimination of β-naphthylamine from some chemical plants focused attention on the carcinogenic properties of benzidine—as sulfate or base. Although benzidine elicits neoplasms of the urinary bladder in man and dog, it produces tumors of the liver and large intestine of rats.

4-aminodiphenyl

Interest in 4-aminodiphenyl (xenylamine) as a potential carcinogen was stimulated by the information that the compound had been isolated from mixtures formed during the manufacture of triphenylmethane dyes and also the demonstration of carcinogenic potency of chemically related substances. As 4-amino-

diphenyl produced a variety of tumors in rats, and bladder tumors in dogs. Walpole, Williams, and Roberts forecast in 1952 that bladder tumors would develop in men exposed to it. In 1955, Melick and others reported bladder tumors in 19 men engaged in the manufacture of 4-aminodiphenyl in the United States since 1938. It had taken about 17 years for the carcinogen to manifest its potential, during which time 171 men had been exposed to risk. Manufacture of 4-aminodiphenyl was never started in Great Britain because of the experimental evidence for its carcinogenicity.

NEW GENERAL PRINCIPLES

These studies permit two more generalizations:

1. Even a powerful carcinogen requires weeks or months to elicit cancer in mice or rats, years in man, constituting a highly significant though variable fraction of the total life span of the particular species.
2. No change need be recognizable in the organ or tissue destined to become cancerous before the cancer itself appears, although in some cases a predictable sequence of structural changes characterizes the precancerous interval.

JUDGMENT NEEDED

Just as important is the experience gained from such work to guide the testing of other compounds for carcinogenic activity. Many judgmental decisions are required which relate to:

1. *Validity of experimental design and its adequacy.*—This must be guided by known quantities of a chemical compound and its relatives. It must be "biologically available" in order to produce any effect. Solubility is one extremely important factor, but too much of a compound may mask its carcinogenic property by eliciting specific or general toxicity which of itself reduces the life span of the subject and prevents a cancerous response.

2. *Reasonable interpretation of results.*—No short cuts which would reduce the time of testing by evaluating something other than the ability of an agent to produce malignant neoplasms are now available to the experimentalist. The cancers produced by the experimental procedures must possess recognizable biological attributes of the malignant neoplastic state. As in man, pathologic diagnosis requires skill and must be based on correlations between structural change and biological behavior no matter what species is being studied.

3. *Cancerous responses must be reproducible.*—This can be shown by repeated experiments conducted by the same or different individuals or by reference to known qualities of an agent which permit accurate forecast of carcinogenic properities to be discussed later in some detail. Many isolated experiments, recorded in the literature, which attribute carcinogenic properties to certain chemicals remain unsubstantiated and are of questionable validity.

A large number of chemical compounds are available which cause a wide variety of cancers in one or more species but have not been shown conclusively to produce cancer in man. Many of them, in fact, have never been introduced into the human environment beyond the experimental laboratory. Others, however, are proving useful in various enterprises, so that some degree of human exposure is inevitable. To deny the use of these materials in limited and controllable operations in commerce and industry would deny their ability to control the use of many poisons that are used daily without substantial risk to the personnel engaged in the operation. Moreover, it would deny the use of many medicinal preparations with which the medical profession effectively controls many diseases. The uncontrolled use of the same agents can represent serious hazards.

ESTIMATING RISK TO MAN OF CARCINOGENS FOR ANIMALS

It becomes necessary to assay the degree of risk produced by uncontrolled and uncontrollable use of chemicals known to produce cancer only in some laboratory species. Carcinogenic property is not equivalent to a physical or chemical property of a compound which goes with it under all circumstances and is lost only when the molecule ceases to exist. The carcinogenic property can be modified in some cases by comparatively simple manipulations of the diet, change in the vehicle in which the agent is administered, or even change in the route of administration. Such considerations have led some to question the significance of the scientists' findings among laboratory animals in relation to human experience. Some of the more important points will be amplified.

1. *Experience in the experimental laboratory does not predict unequivocally the reaction of the human species to the same agent, be it carcinogenic or otherwise.*—A chemical that produces cancer in the rat may be inactive in the mouse. Guinea pigs, rabbits, dogs, and monkeys are often alleged to be more resistant or even completely resistant to some compounds highly carcinogenic for the mouse and rat. Research has clearly defined the probable reason for the different reactions of various species for the carcinogenic aromatic amines. Less detailed information is available for other classes of cancer-producing chemicals, and, indeed, judgments on species variation may be premature. The question has been examined by Shubik and Hartwell,[2] who write:

"Two of the most debated issues in carcinogenesis as applied to the human may be commented on from surveying this material. The first concerns the matter of species variation and with it the effects of different routes of entry. It is remarkable that so little investigation has been undertaken on various species. A large proportion of the positive results reported refer to mouse investigations and of those the vast majority refer to experiments on the skin or in the subcutaneous tissues. The survey therefore provides but little data with which to form opinions on the matter of species variation. It is, however, notable that with the potent polycyclic hydrocarbons all the species adequately tested have eventually yielded tumors; notably in this supplement the induction of tumors in the monkey is recorded. A comparison of the data in various species obtained with the aromatic amines, particularly beta-naphthylamine, introduces the second important issue, the significance of the induction of benign tumors. Although the dog is recorded as the only animal developing carcinoma of the bladder following feeding with beta-naphthylamine, it is notable that the rabbit and the rat are repeatedly recorded as developing bladder papillomas. In the instance of the arsenicals, implicated repeatedly as a carcinogen in man, animal studies again repeatedly record the induction of a small incidence of benign skin lesions. Such correlations certainly make a clear evaluation of the significance of the induced benign neoplasm necessary. Gross variations in species responses are exceptional in this material; carbon tetrachlorid stands out particularly, inducing hepatimas in the mouse, but not in the rat or several other species tested extensively. In other instances adequate studies of species variation and variations in routes of entry have been accorded little attention, and data recorded to this time do not provide the basis for many views on this subject."

2. *The route of administration affects the carcinogenic property, as would be expected.*—A compound carcinogenic for skin or subcutaneous tissue if destroyed by the ferments of the stomach could not exert its characteristic effect when fed, but in its altered form might take on additional and unexpected properties. Similarly, a chemical that is not absorbed from the gastrointestinal tract cannot affect tissues or organs with which it has no contact, and the rate of absorption of soluble chemicals may influence the cancerous response if concentration of the agent in the blood is a primary determining factor in carcinogenicity.

The objective of carcinogenesis research has been to identify causes of cancer in man through direct approaches and through the discovery of pertinent broad principles to be learned from the study of cancer production in experimental animals. Topical application and parenteral injection have been used much more extensively than feeding in most experiments, partly for economic reasons, but more importantly for the greater degree of control afforded the scientist, hence the greater ability to quantify his results.

The alimentary canal is an important portal of entry to the organs and tissues, but it is not the only one. Contaminated atmospheres are equally important, and some carcinogens, notably β-naphthylamine and benzidine, are readily absorbed through the intact skin in adequate quantity to produce cancer in man.

3. *Perhaps the greatest debate concerns dose-response relationships in chemical carcinogenesis.*—Pitifully few good studies are available. As stated above, not all members of a genetically heterogeneous species are expected to develop cancer when exposed to an optimal dose of a potent carcinogen. The inbred strains of mice represent varying degrees of susceptibility and resistance, though

[2] From Philippe Shubik, M.B., B. Ch., Ph. D., and Jonathan L. Hartwell, Ph. D., "Survey of Compounds Which Have Been Tested for Carcinogenic Activity," supp. I, Washington, D.C., U.S. Government Printing Office, 1957.

Dr. Shubik is professor of oncology and cancer coordinator at the Chicago Medical School, Chicago, Ill., and Dr. Hartwell is a chemist on the staff of the National Cancer Institute, National Institutes of Health, Public Health Service.

resistance must be considered in a relative sense because a massive dose can overwhelm native resistance, all other things being equal. If one is searching for a carcinogenic effect, the use of the most susceptible experimental subject seems advisable. No-effect levels might well be found, but they would pertain to only the particular experimental conditions under which they were determined. It makes a great difference whether the detectable response in an experiment represents a 10 percent increase or a 1 percent increase in cancer or some other manifestation of toxicity. In any case, some arbitrary decision must be made as to the margin of safety to be used in translating data obtained from animal experimentation to man, taking into consideration all known facts concerning the carcinogen in relation to its proposed use in the human environment. Exactly the same type of problem confronts physicians who introduce new drugs into patients. The risks must be weighed against the anticipated benefits.

A single application of a powerful carcinogen to the skin of mice can produce malignant tumors weeks or months later. In the absence of quantitative data, no dose-response relationship can be defined for this situation. It would not be the least bit surprising if a single dose of carcinogen administered by mouth did elicit cancer in some part of the body.

Some experimental evidence suggests that the size of the dose of a carcinogen required to produce a cancer is more important than the period of time over which it is given. Hueper has recently observed an interesting effect of dose response on the production of subcutaneous tumors in mice by benz[a]pyrene. Two series of mice received single injections of the carcinogen or repeated injections at monthly intervals. When the total dose was low the tumor frequency was approximately the same in both groups. Single large doses in increasing amount produced a plateau in the dose-response curve, but multiple individual doses to the same total dose revealed a steadily progressive increase in carcinogenicity.

No one at this time can tell how much or how little of a carcinogen will be required to produce cancer in any human being.

4. *Age factors assume increasing importance.*—Some experiments have suggested a greater susceptibility of weanling mice to the carcinogenic action of specific chemicals than of mice just a few weeks older. The differences have not been great. W. E. Smith and H. S. N. Greene independently devised a test for carcinogenicity in which the suspected compound in extremely small concentration was added to embryonal mouse tissue and the whole implanted subcutaneously in adult mice. The embryonal tissue responded much more rapidly than most adult tissues, but little attention was paid to the fundamental import of this observation until Gross demonstrated the exquisite sensitivity of mice less than 1 day old to the carcinogenic action of certain viruses which would not produce cancer in older mice. The sensitivity of newborn mice to chemical carcinogenesis is now being tested. A brief report by Shubik and colleagues indicates qualitative and quantitative differences in the responses of newborn mice to a single subcutaneous injection of 9,10 dimethyl-1,2-benzanthracene, and comparable studies of other chemical carcinogens by Kelly and O'Gara, now in progress, emphasize the need for expanding this kind of study. Feeding chemicals to such tiny subjects presents knotty practical problems.

5. *The effect of a chemical carcinogen can be markedly increased by other chemical compounds with little or no carcinogenic power, such as croton oil or dodecane.*—The skin of a mouse may be given a single dose of a carcinogenic cyclopentenophenanthrene which of itself will not induce tumor formation in unit time. Addition of croton oil or dodecane to the same area some days or weeks later is followed by the prompt and dramatic appearance of being skin tumors and eventual development of true cancers. It is argued from this type of experience that the basic process in cancer production is a rather sudden event which manifests itself only after some additional stimulus promotes division of the affected cells. The promoting agent, also known as a co-carcinogen, need not possess carcinogenic potency. Little is known of this phenomenon with respect to cancer production in other sites, nor is adequate information available on the effects of two or more chemical carcinogens on the process of cancerization to establish generalizations.

No better insight into the quantitative nature of the cancerous response is afforded than the experiments and conclusions by Blum, cited above. While his experience was solely with ultraviolet light, one would expect the same basic principles to apply to cancer produced by ionizing irradiation or by chemical

carcinogens. The amount of the agent at which damage will be counterbalanced by repair may be expected to shift according to the potency of the particular agents of interest, but basically one would expect that a dose competent to elicit a cancerous response would necessarily have a cumulative effect.

MORE GENERALIZATIONS

Some of these factors were considered in greater detail in a report prepared by the Subcommittee on Carcinogenesis to the Food Protection Committee, Food and Nutrition Board, National Academy of Sciences—National Research Council. These generalizations were made:

"1. If a substance is shown by adequate tests to be carcinogenic for one mammalian species, it is probable that it is carcinogenic for many, but not necessarily for all, others, although quantitative differences between species may be marked.

"2. Carcinogens are likely to be active when administered by any of several, but not necessarily all, routes, although noteworthy quantitative differences between species may be marked.

"3. There are non-tumorigenic levels of exposure to carcinogens for given experimental conditions, but threshold levels may be affected by a number of factors associated with the carcinogenic process.

"As noted, these generalizations seem to be warranted in the case of potent carcinogens. There is practically no comparative information on the activity of weak carcinogens and weak carcinogenic mixtures in various species and by different routes of administration. If the mechanisms of action of the potent and weak carcinogens are the same, as, in the absence of knowledge, they might be assumed to be, then the generalizations are probably warranted in the case of weak carcinogens."

WEAK CARCINOGENS

Thus far, this discussion has considered principally the highly potent carcinogens; yet, the weaker ones are probably equally, if not more, important. Kotin[3] has analyzed the problem, and a part of his discussion follows:

"The increasing number of laboratories, both industrially allied and associated with educational or research institutions, engaged in the study of carcinogenesis makes it imperative to evaluate the experimental scope and clinical significance of such studies. The need appears to be especially pressing as it relates to the entity of experimentally 'weak' carcinogens. The classification of carcinogenic hazards on the basis of their human biological potency is the lodestone of all workers in the field of carcinogenesis.

"Specific limitations have been recognized in studies on carcinogenesis over and above those inherent deficiencies long accepted in the extrapolation of animal data to the human experience. In acute toxicity studies or in the screening of chemotherapeutic agents these deficiencies are at a minimum. The more prolonged a period of experimental study necessary or the greater the interval of the human exposure needed for a response to be demonstrated, the more exaggerated are the dangers of extrapolation. In the instance of studies on carcinogenesis, the risks are at a maximum, since, in addition to the traditional hazards present in the extrapolation of experimental findings, a fundamentally greater impediment exists in the fact that carcinogenesis almost of necessity follows exposure to a biologically indolent substance acting over a prolonged period of time. Nevertheless, the experimental production of cancers in animals with the use of occupational carcinogenic agents demonstrates the value of such procedures when competently implemented and interpreted.

"The grading of the biologic puissance of environmental carcinogenic agents represents a legitimate goal of epidemiologic studies based on human incidence data. In the laboratory, gradations obtained, even though meaningful experimentally, appear to be of limited significance within the limits of the experimental design. The extrapolation of data relating to the potency of a carcinogenic agent from the laboratory experiment to the human is at present unwarranted. At best, a substance may be demonstrated to be either carcinogenic or noncarcinogenic within the limits of any set of experimental circumstances. Conservatism necessitates a 'virtually all-or-none' concept in utilizing experimental

[3] From Paul Kotin, M.D., "Experimentally Weak Carcinogens," Cancer Research, vol. 18, pp. 1–3, 1958. Dr. Kotin is professor of pathology at the University of Southern California.

data for humans. A large number of workers in the field of experimental carcinogenesis have erroneously tended to deprecate the clinical importance of experimentally weak carcinogens. To implicate a potent experimental carcinogen as representing a greater human hazard is perhaps understandable, and indeed numerous clinical and epidemiologic studies have shown such a relationship to exist. To minimize the importance of or to dismiss a weak experimental carcinogen in terms of human significance is wholly unsupportable. As will be discussed, the reverse seems to be the case.

"Associations between occupational exposure and abnormal cancer incidence in the past have frequently been so conclusive as to inevitably suggest an occupational environmental source of the carcinogen. The abnormal incidence, the peculiar distribution of cancer, and the delimited area of risk have inadvertently resulted in innocently conceived and unfortunately successful experiments in human carcinogenesis. The bladder cancers in the aniline dye industry, the lung cancers in the radioactive ore miners, and the bone cancers in the radium dial painters are clinical examples of circumstances in which experimental data served only to delineate the specific carcinogenic agent. Despite the relative plethora of knowledge relating to these instances, pertinent quantitative data on potency obtained experimentally have not come to the author's attention. The futility at present of attempting to obtain extrapolatable experimental potency data from more cryptic circumstances seems perfectly obvious.

"The difficulties and limitations in the chronic testing for carcinogenicity have been admirably reviewed by Shubik and Sice. They additionally point up the potentially serious problem of promoting agents as environmental factors in human carcinogenesis. The activity of these agents may be critical in concluding whether a test substance is a strong or weak factor in carcinogenesis. Their observations specifically denote the fallacious reasoning exemplified by the concept of 'degree of activity' of carcinogenic agents. Exact appreciation of the development of neoplastic disease in humans requires an awareness that cancer induction represents a pathogenetic sequence occurring stepwise and involving the activity of multiple factors. Many of these factors need not be either carcinogenic agents per se or even necessarily promoting agents. Promoting agents alone represent only a small segment of the noncarcinogenic environmental factors capable of modifying the carcinogenic response, and a whole spectrum of host-modifying factors may be only second in importance to the carcinogen itself in determining the occurrence of a cancer. The identification of a carcinogen by bioassay with the use of inbred strains represents, in essence, the educidation of but one link in cancer development, albeit the cardinal one. The dangers of attempting to evaluate the carcinogenic potency of a given substance for humans from this single viewpoint in light of the concept of pathogenetic sequence would appear to be obvious.

"Under given narrow experimental circumstances, attempts have been made in the past to establish indexes of carcinogenic potency, with the use of inbred strains of F_1 hybrids. These indexes have proved of limited value, even in the laboratory. Though these strains introduce an artifact having no parallel in the human experience, their uniformity serves admirably in determining the presence or absence of a carcinogenic response to a test agent. To postulate quantitative human significance to data derived from their use requires the assumption of a ludicrous situation in which carcinogenic agents act on humans, as it were, in a vacuum free of any exogenous and endogenous modifying factors.

"The foregoing should not be construed as evidence calculated to minimize the value of experiments in carconogenesis; instead, a critical appreciation reveals that it more specifically aims at placing experiments in carcinogenesis in their proper perspective. A specific instance can be used to demonstrate this: 20-methylcholanthrene is frequently used as a positive experimental control in the bioassay of unknown substances for carcinogenic potency. One can almost assume in an a priori manner that, by comparison, the materials under study will almost certainly prove to be weak carcinogens. The potency of this hydrocarbon is so great that were all compounds bioassayed for carcinogenicity required to have its potency, the need for experimental carcinogenesis as a discipline would essentially disappear. Potent carcinogens of this order by their very strength are almost sure to be discovered clinically. In essence, a strong carcinogen identifies itself by the very circumstances which aroused suspicion in the first place. It is assuredly the less potent carcinogens that seem to be more important in human cancer, and it is these that provide

the real problem for evaluation. A major objective of experimental carcinogenesis is, therefore, the bioassay for the presence of weak carcinogens. Textbooks of pharmacology and toxicology classically refer to the more cryptic dangers inherent in exposure to weak insults. The potent hazards identify themselves in a clarion manner. Current observed changes in the incidence of several cancers may be reflections of variations in the environmental presence of weak carcinogenic agents. As yet unidentified agents may be disappearing, as in the circumstances of gastric cancer decrease, while, in the instance of leukemia and lung cancer, suggestive etiologic factors have been noted.

"The need for experimental demonstration of carcinogenicity in experimental species follows either epidemiologic or clinical observations and suggests the presence of an environmental carcinogenic agent. A significant correlation has been demonstrated between the observation of cancer in man and the induction of tumors in animals. The failure to obtain high tumor yields under any given experimental circumstances should in no way be interpreted as minimizing the potential hazard to man. Exclusive emphasis should be placed on the fact that tumor induction has occurred, and especially that negative findings may reflect species' differences. Kennaway has recently emphasized the importance of weak carcinogens, noting that they may be the really significant ones in human carcinogenesis. The compatibility of this concept with the panorama of human cancer as seen is obvious. As noted above, strong human carcinogens are not reticent in making their presence known. Druckrey has well summarized the entire problem with his observation that as yet we know of no tolerable dose of a carcinogen. Repeated observations on the cumulative effect of carcinogens strongly suggest that, given enough time and a sufficient exposure in the presence of other pathogenetic factors, the inevitability of cancer formation is one of the few certainties of life. In the biological sense, the stimulus for cancer induction must surely be a 'weak' one, so that the survival of target cells is maintained, allowing for ultimate cancer induction."

COMMON BIOLOGICAL EFFECTS SHARED BY SOME CARCINOGENS

While chemical configuration is an inadequate basis for predicting the ability of a compound to produce cancer, possession of a common biological effect known to be associated with a particular type of cancer may be of the utmost importance. Three examples will be discussed briefly:

Estrogens

Female sex hormones known as estrogens are formed in the bodies of most mammals of both sexes. Extraction of such naturally occurring substances led to intensive research on all aspects of their biological activity. Parenteral administration of such estrogens increased the incidence of mammary tumors in females belonging to strains of mice spontaneously susceptible to cancer of the breast, caused the appearance of mammary cancers in male mice which do not develop this neoplasm spontaneously, produced leukemias, cancers of the uterine cervix and tumors of the pituitary and interstitial cells of the testis in mice, mammary cancers and pituitary tumors in rats, neoplasms of the kidneys in hamsters. The chemical variety of naturally occurring estrogens was sufficiently great to establish the thesis that agents possessing biological properties usually associated with female sex hormone activity would be carcinogenic. The necessity for some genetically determined susceptibility factor was recognized. It was not surprising, then, that synthetic chemicals of the diethylstilbestrol type proved to be carcinogenic because they displayed estrogenic activity, though their chemical structure was different from that of the naturally occurring female sex hormones. Unlike the natural estrogens, stilbestrol was active on oral administration, hence was capable of eliciting cancerous responses when fed to appropriate laboratory animals.

Both the natural and synthetic estrogens have been useful therapeutic agents in the hands of the medical profession. Prolonged administration, usually of stilbestrol, has been accompanied by development of mammary cancer in some few male patients. A cause-and-effect relationship has been postulated by some physicians. A contribution to the production of uterine cancer in women has also been documented, but the influence of administered estrogen on the occurrence of cancer of the breast in females would be difficult to detect without carefully designed studies because of the relatively high frequency of this lesion in women of the general population. The carcinogenicity of stilbestrol for humans is a sub-

ject of great interest to the medical profession which can not be resolved at this time. If endocrine dysfunction, including abnormalities of estrogen activity, is a major contributing factor to the genesis of clinical cancer, as it seems to be, it would seem imprudent to increase the risk by increasing the degree of abnormality through the indiscriminate and uncontrolled exposure of the population to any concentration of estrogens which are active when eaten.

Goitrogens

The discovery of specific, potent, and useful drugs which interfere with thyroid function has stemmed from the basic observation that ingestion of certain foodstuffs in very large amounts increased the size of the thyroid in some experimental animals. Two types of antithyroid compounds or goitrogens can be recognized by biochemical "thiocyanate type" and "thiourea type." Both varieties of antithyroid substances may be found in the genus Brassica; cabbage contains the "thiocyanate" and rape seed or rutabaga turnip the "thiourea" type, although antithyroid activity in the latter must be released from its naturally occurring inactive state. A good deal of information exists on the biochemical mechanisms involved in the antithyroid actions, and, in addition, such thiourea type goitrogens as propylthiouracil or triaurea will produce metastasizing cancers of the thyroid when fed for prolonged periods to mice or rats. The tested carcinogenic goitrogens are synthetic organic chemicals. No information exists on the carcinogenic properties of natural goitrogens, but one would not be surprised if they too produced cancer if fed in adequate amount for prolonged periods, especially those of the thiourea type. The early experiments reported by Bielschowsky utilized a known carcinogen, N-2-fluorenylacetamide, without demonstrable specificity for thyroid, plus the goitrogen allylthiourea to produce thyroid neoplasms in rats, but many data reported subsequently indicate that the nonspecific carcinogen is not essential to tumor production.

Rats will also develop thyroid tumors in response to a single massive dose of direct X-ray to the thyroid or through chronic feeding of a diet low in iodine. It has been stated that goitrogen-induced neoplasms of the thyroid are not cancers because they would disappear if dosage were stopped. No direct information is available on this speculation. Goitrogens are useful in the treatment of hyperthyroidism and produce diffuse structural changes in the gland of a rather bizarre and characteristic type which disappear when the drug is withdrawn. Certainly some experimental cancers of the thyroid induced by iodine-deficient diets do persist when iodine is added to the diet, as described by Isler, Leblond, and Axelrod.

The only readily available information on the goitrogenic action of 3-amino-1,2,4-triazole is a biochemical study of its antithyroid activity, reported by Alexander. This synthetic chemical has not been isolated from natural sources, as far as one can determine. The sole evidence of its carcinogenic potency is contained in a petition to the Federal Food and Drug Administration, and the significance of the data would have been difficult to evaluate without the known facts on experimental thyroid carcinogenesis summarized above.

Hepatotoxins

A chemical compound which produces cirrhosis of the liver might well produce cancer of that organ. Not all hepatotoxic agents carcinogenic, and cancers of the liver can occur without cirrhotic change, though about 75 percent of hepatic cancers in the population of the United States arise in cirrhotic livers. The association between hepatotoxins and cancer is nowhere near as clearcut as are the relationship of thiourea goitrogens and estrogens to cancer formation. The point is moot from the standpoint of control, since production of liver damage of itself would require careful control of any hepatotoxic compound in the human environment.

THE ROME SYMPOSIUM ON FOOD ADDITIVES

A symposium on the potential cancer hazards from chemical additives and contaminants to foodstuffs was held in Rome, August 10–15, 1956, under the auspices of the Committee on Causative Factors of Cancer and the Committee on Cancer Prevention of the International Union against Cancer. The report of their deliberations is published in Acta Unio Internationalis contra Cancrum 13: 169–363, 1957. The participants representing many countries included distinguished scientists particularly experienced in research on the causation of

cancer. They viewed the problem as a global one. Their resolutions refer to "general problems, biological experimental methods, purity standards and analytical methods and special problems" such as food dyes and food contaminants. Their general conclusions follow:

"The conference recommends that, as a basis for active cancer prevention, the proper authorities of various countries promulgate and exact adequate rules and regulations prohibiting the addition to food of substances having potential carcinogenicity."

The addresses of the principal speakers before the symposium are included in the Acta reference. Here are some of the subjects covered and statements contained in summaries of the major papers:

R. Truhaut[4] (France): "The Risks of Cancer Production Which Can Result from the Presence of Foreign Substances in Foods."

"The reporter insists in his introduction on the increasing number of food additives which may be incorporated in food or as a result of treatment before slaughtering, or harvest, or as a result of contamination during processing, storage or distribution, or as a result of the voluntary addition for different purposes like preservation or in particular to stimulate the desire of the consumer.

"He draws attention on the risks of long term toxicity and particularly on the risks of cancerization which could follow and he considers the different positions adopted in the face of this fundamental problem of alimentary hygiene.

"The most careful position, if one wants to avoid to see man serve as guinea pig, consists in prohibition of the use of any food additives unless after prolonged tests on animals, its inocuity for human health may be considered as highly probable in the conditions of its usage."

W. C. Hueper[5] (U.S.A.): "The Potential Role of Nonnutritive Food Additives and Contaminants as Environmental Carcinogens."

"A rapidly growing number and variety of nonnutritive substances have been introduced during recent decades into foodstuffs intended for general human consumption through the use of modern methods of food production and processing. Some of these chemicals are intentionally added to foods for various reasons, while others are employed for different purposes in the production of foodstuffs and remain unintentionally in them as residues. A disturbing aspect of this development is that there exists no mandatory provision for assuring, a priori, that biologic properties of each of these additives and contaminants, particularly later long-term or delayed effects, have adequately been studied. The circumstances suggest the virtual certainty that many have not. It is especially important in this respect that observations made during recent years in men and experimental animals have demonstrated a not inconsiderable number of chemicals similar to, or identical with those introduced into foodstuffs which possess carcinogenic properties. The actual or possible existence of cancer hazards related to carcinogens in foodstuffs, therefore, poses a serious public health problem, since the daily and lifelong exposure to such agents would represent one of the most important of the various potential sources of contact with environmental carcinogens for the population at large, acting on both the healthy and the sick, the metabolically normal and abnormal alike.

"Although the great majority of the different cancerous reactions elicited by the various food additives and contaminants mentioned were produced either by the administration of excessively high doses or followed upon their introduction through unphysiologic routes or routes distinct from those encountered under ordinary alimentation, and developed in animals differing to various degrees in metabolic respects from man, the mere fact of the existence of such responses, nevertheless, presents a definite warning deserving serious attention if possible endemic and epidemic cancerous manifestations among exposed population groups are to be avoided.

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[4] From Rene Truhaut, "Les risques de cancerisation pouvant resulter de la presence de substances etrangeres dans les aliments," Acta Unio Internat. contra Cancrum, vol. 13, pp. 207–219, 1957. Dr. Truhaut is professor in the Faculty of Pharmacy of the University of Paris, chief of chemical research in the Clinical and Therapeutic Center of the Gustave Roussy Institute, also known as the Cancer Institute of Paris.

[5] From W. C. Hueper, M.D., "The Potential Role of Nonnutritive Food Additives and Contaminants as Environmental Carcinogens," Acta Unio Internat. contra Cancrum, vol. 13, pp. 220–252, 1957. Dr. Hueper is Head of the Environmental Cancer Section of the National Cancer Institute, National Institutes of Health, Public Health Service. He is the author of the classic treatise on environmental cancer, "Occupational Tumors and Allied Diseases," and recently received the American Association for the Advancement of Science-Anne Frankel Rosenthal award for outstanding contribution to knowledge of cancer in 1959.

"Because of these observations incriminating certain food additives and contaminants in the production of cancers, and in view of the possibility that a comprehensive investigation of other such agents may result in the discovery of additional dietary carcinogens, the organization of a comprehensive investigative program on these matters appears to be desirable."

R. Souverain [6] (France): "Comparison of the Legislative Acts of Different Countries Concerned With the Presence of Chemicals in Foods."

"It is obvious that the foods must contain a minimum of contaminants; that is to say, substances produced involuntarily during their processing.

"But it is the voluntary addition of chemical substances which requires mainly the vigilance of the governments.

"It seems indispensable to lay down at a national level lists of authorized additives (positive lists) restricted to a minimum prepared with due advices of medical officers and hygienists.

"At a world level, it is the duty of relevant international organizations to recommend which principles must govern the laying down of lists of food additives. Those principles are shown up by comparison of the legislation of different countries. The national control organizations must look after the due observation of the rules established in those matters."

E. Boyland [7] (Great Britain): "The Determination of Carcinogenic Activity."

"The problems involved in the determination of carcinogenic activity are discussed including the choice of animal species, the sex of animals, the route of administration, the nature and volume of the vehicle used, the dose of the suspected carcinogen, the duration of the test, the necessity of negative and positive controls, cocarcinogenesis, the pathology of the lesions induced, the possible short-term indicative tests and the interpretation of the biological results. Arguments for the prohibition of carcinogenic food additives are presented."

K. Setälä, P. Holsti, and S. Lundbom [8] (Finland): "Criteria for Evaluating the Risks of Cocarcinogens in Cancer Production."

"Serious attention has to be paid to factors which are able to enhance the effects of the 'actual' carcinogens, that is, to cocarcinogenic and/or tumor promoting agents in man's environment and in the food. There are justified reasons to assume that—at least under certain circumstances—the tumour promoters (and/or cocarcinogens) are of greater significance in tumorigenesis than perhaps so far realized. It has appeared that a great number of synthetic detergents (emulsifiers, lipophilic-hydrophilic, surface-tension lowering, nonpolar-polar compounds, wetting agents) possess strong tumour promoting and/or cocarcinogenic properties. The most potent ones are to be found among nonionic compounds which contain long-chain fatty acids in their molecule and which at the same time are comparatively water soluble. Especially certain tween-type materials (polyoxyethylene sorbitant fatty acid esters) belong to this category. The time of appearance of tumours, the incidence of tumours as well as the number of tumours per tumour-bearing animal are directly related to the frequency with which these seemingly harmless tumour promoters are applied and to the concentration in which the promoters are employed."

A. Castille [9] (Belgium): "Report on the Research Methods and Doses of Coloring Agents."

"The author gives a brief description of the method worked out in his laboratory to extract, separate, identify, and determine synthetic coloring matters—cancerogenic or not—in foods."

H. Högl [10] (Switzerland): "Standards of Purity from Nonnutritive Food Additives."

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[6] From R. Souverain, "Comparaison des Legislations de Divers Pays en ce Qui Concerne la Presence de Produits Chimiques Dans les Ailmens," Acta Unio Internat. contra Cancrum, vol. 13, pp. 253–268, 1957. M. Souverain, a lawyer, is divisional inspector of the Service for Prevention of Frauds in Paris.

[7] From Eric Boyland, Sc. D., Ph. D., "The Determination of Carcinogenic Activity," Acta Unio Internat. contra Cancrum, vol. 13, pp. 271–279, 1957. Professor Boyland is a chemist at the Chester Beatty Research Institute, Institute of Cancer Research, Royal Marsden Hospital, London.

[8] From Kai Setälä, Paul Holsti, and Sinikka Lundbom, "Criteres d'Evaluation des Dangers de Cancerisation les Actions Co-Cancerigenes," Acta Unio Internat. contra Cancrum, vol. 13, pp. 280–289, 1957. Dr. Setälä is professor of pathology and the other scientists are also members of the Department of Pathology, University of Helsinki, Helsinki, Finland.

[9] From A. Castille, Rapport sur les "Methodes de Recherche et de Dosage de Colorants," Acta Unio Internat. contra Cancrum, vol. 13, pp. 293–298, 1957. Professor Castille is director of the Institute of Pharmacy of the University of Louvain, Louvain, Belgium.

[10] From H. Högl, "Criteres de Purete des Substances Nonnutritives Ajoutees aux Denrees Alimentaires," Acta Unio Internat. contra Cancrum, vol. 13, pp. 299–311, 1957. Dr. Högl is associated with the Ministry of Health in Switzerland.

"Standards of purity can only be fixed for food additives when the number and the nature of the latter are exactly definite, limited and when they are included in positive lists.

"Relatively simple standards of purity can be fixed for impurities of mineral nature. As regards impurities of organic nature, each case must be carefully examined and the manufacturing process ought to be completely known."

J. F. Reith (the Netherlands): "Paper Chromatography of Synthetic Food Colors: Results and Conclusions." A purely technical paper.

E. Gross[11] (West Germany): "Good Dyes."

"The introductory exposition sets forth the factors which support the possible danger of cancer resulting from adding certain dyes to foodstuffs; it names the national or international bodies who have dealt with these problems; and it mentions the proposals which have so far been made with regard to the use of foodstuff dyes. It is recommended to introduce positive lists in those countries, too, which have not yet compiled such lists. These positive lists contain dyestuffs which have been subject to careful and prolonged tests and, according to the present standard of scientific research, have been found to have no harmful effects on health. The use of these dyestuffs only should officially be permitted. The addition of other dyes to foodstuffs should be prohibited. The need for their use has to be checked in each case, and the number of dyes for foodstuffs limited to a minimum. An international agreement on the positive lists should be aimed at."

A. J. Lehman and A. A. Nelson[12] (U.S.A.): "Problems of Food Safety."

"The current problems of food safety fall into three general groups, namely, food production (e.g., insecticides, herbicides, animal growth stimulants), food processing (e.g., antioxidants, colors, emulsifiers), and food packaging (e.g., resins, plasticizers). The necessity for pesticides in the production of food crops is not questioned. The major pharmacological problem with the pesticides is to determine the hazard associated with the continued use of agricultural products treated with normal amounts of given pesticide(s). We have described comprehensive procedures for evaluating these hazards, including carcinogenesis.

"The possible carcinogenicity of food additives has also been the subject of critical scrutiny. There has been too much speculation and uninformed opinion regarding the safety of food colors. None of the 19 certifiable food, drug and cosmetic colors has as yet shown evidence of carcinogenicity in man or in feeding tests with experimental animals. Some colors have been taken off the list because of other evidences of toxicity, which no longer allow those colors to be classed as harmless. We want to emphasize that carcinogenicity is but one of a number of equally deleterious phenomena which may develop during chronic toxicity testing, and that each of these should be given its due weight.

"In recent years one synthetic sweetener and one (selenium) insecticide have been found carcinogenic when mixed in the diet of animals, and they are no longer permitted in foods in the United States. At present, it can be said that no intentional food additive allowed to be used in the United States is carcinogenic by the route normally used."

STATEMENT OF A NATIONAL RESEARCH COUNCIL COMMITTEE

An even more cogent discussion of "Problems in the Evaluation of Carcinogenic Hazard From Use of Food Additives" is contained in the report of the Subcommittee on Carcinogenesis of the Food Protection Committee, noted above. The concluding paragraph reads:

"Because of the vagueness of present knowledge concerning quantitative aspects of the carcinogenic process, use of any amount of a carcinogen as a food additive probably is justified only if (1) values to the public are such that banning the use would constitute an important loss or hardship, and (2) there is no reasonably good noncarcinogenic alternative."

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[11] From Eberhard Gross: Lebensmittelfarbstoffe. Umstände, die für eine mögliche Krebsgefahr sprechen. Liste der gefährlichen Farbstoffe. Liste der verdächtigen Farbstoffe. Liste der Farbstoffe, die unter gewissen Voraussetzungen eventuell zugelassen werden könnten. Acta Unio Internat. contra Cancrum, vol. 13, pp. 323–336, 1957. Professor Gross is a member of the medical faculty of the University of Bonn, Bonn, West Germany.

[12] From A. J. Lehman, M.D., Ph. D., and A. A. Nelson, M.D., Ph. D., "Problems of Food Safety," Acta Unio Internat. contra Cancrum, vol. 13, pp. 337–363, 1957. Dr. Lehman is Director of the Division of Pharmacology and Dr. Nelson is Chief of the Pathology Branch of the U.S. Food and Drug Administration.

THE STORY OF AN INSECTICIDE

If research in experimental carcinogenesis has no meaning in human terms, it is difficult to understand the following story told in the language of E. K. and J. H. Weisburger:

"The U.S. patent number 2,197,249 entitled 'Insecticide' was granted on April 16, 1940, to Houston V. Claborn and Lloyd E. Smith of the U.S. Department of Agriculture. A portion of the introduction to the patent reads:

" 'An object of the invention is to provide a material suitable for use as an insecticide.

" 'Another object of the invention is to provide a material which is relatively nontoxic to man and domestic animals when taken by mouth and which can be used in place of lead arsenate and other arsenicals for destroying insects without leaving a harmful residue on fruits and vegetables.'

"Among the various fluorene derivatives described, one of the claims of the patent related to 'an insecticide containing as its essential ingredient 2-amino-fluorene.' This claim was substantiated, for the compound at a concentration of 40 parts per million of water gave a 99 percent kill of mosquito larvae, and killed all of the second instar of tobacco hornworm at a concentration of 1 part in 400 of water. Thus, only the criterion cited in the second paragraph above, " * * material which is relatively nontoxic to man and domestic animals * * *" had to be satisfied before this material could be released for use as an effective insecticide.

"This problem was undertaken by Wilson et al. (1941), who reported that N-2-fluorenylacetamide (2-FAA), the acetyl derivative of 2-fluorenamine referred to in the patent, had no demonstrable acute toxicity in rats, mice, and rabbits at a dosage up to 50 mg./kg. by subcutaneous injection, and up to 1 g./kg. by feeding. A temporary refusal of rabbits to eat was the only deleterious symptom observed. Owing to the absence of acute toxic symptoms, Wilson et al. (1941) at first concluded that high concentrations could be tolerated by continuous feeding. Thereafter, from a large series of long-term feeding experiments these authors showed that time of death, percentage mortality, and increase in body weight were all functions of the dietary concentration of 2-FAA, demonstrating a chronic toxicity of this compound.

"From these chronic toxicity studies, the important discovery was made on autopsy of the rats surviving 100 days or more on diets containing various amounts of 2-FAA. It was noted that not only were the livers enlarged, yellow, and nodular in appearance but numerous tumors affecting a great variety of organs and tissues had developed. These results abruptly terminated the service of 2-FAA as an insecticide and opened a new approach using 2-FAA and related compounds to study the mystery surrounding the genesis of cancer."

The decision to withhold 2-fluorenamine from commercial use was a wise one.

SUMMARY

In summary, it must be obvious to the reader that even the experimental production of cancer is an extremely complex process and requires the interactions of many variables. The information produced in the experimental laboratory is of deep and immediate concern to the causation of cancer as it affects man. At the present time, all information available in respect to any given carcinogen should be evaluated in determining its potential risk when introduced into the human environment, with the full realization of the limitations of our ability to extrapolate from animal experience to human experience, and further awareness that information obtained from continuing study of such complex problems may modify positions taken the present time with respect to a given set of circumstances.

Secretary FLEMMING. In connection with the statement just quoted from the Food Protection Committee report, I want to call attention to the fact that the two criteria recommended by the Committee are connected, not by an "or" but by an "and." I am advised by Commissioner of Foods and Drugs George P. Larrick that he and his associates know of no situation in this country which meets both of these criteria. If and when such a situation does develop, we will present the facts to the Congress with a request for appropriate action. We

believe such situations—if they occur at all—will be so few and far between that a decision to subject the public to the risk involved should be a joint decision on the part of both the legislative and executive branches.

The Food Protection Committee in its report also stated that "meaningful extrapolation" from levels of carcinogens in the diet of animals which have no effect on the animal to a safe level for man is "currently impossible."

The preponderance of scientific evidence clearly dictates our position: Our advocacy of the anticancer proviso in the proposed color additives amendment is based on the simple fact that no one knows how to set a safe tolerance for substances in human foods when those substances are known to cause cancer when added to the diet of animals. I should like to underline again one statement in particular which I read earlier from the summary of Dr. Mider's review of the role of certain chemical and physical agents in relation to cancer. It is this:

No one at this time can tell how much or how little of a carcinogen would be required to produce cancer in any human being, or how long it would take the cancer to develop. [Emphasis supplied.]

This is why we have no hesitancy in advocating the inclusion of the anticancer clause.

Unless and until there is a sound scientific basis for the establishment of tolerances for carcinogens, I believe the Government has a duty to make clear—in law as well as in administrative policy—that it will do everything possible to put persons in a position where they will not unnecessarily be adding residues of carcinogens to their diet.

The population is inadvertently exposed to certain carcinogens. Ultraviolet light occurs in sunlight. The burning of most fuels produces some minute quantities of chemical compounds that elicit cancer in experimental animals, and some of the same agents can be identified in soot, tars, dust, and similar residues—even from the atmosphere. In view of these facts, it becomes all the more imperative to protect the public from deliberate introduction of additional carcinogenic materials into the human environment.

Whenever a sound scientific basis is developed for the establishment of tolerances for carcinogens, we will request the Congress to give us that authority. We believe, however, that the issue is so important that the elected representatives of the people should have the opportunity of examining the evidence and determining whether or not the authority should be granted to the executive branch.

Many have oftentimes expressed the fond hope that the day is not far distant when we shall be able to control cancer. A dramatic breakthrough in this sense may never come. Rather, the progress—looked at from the standpoint of reducing the number of cases of cancer—may come only as we are willing to give heed to the kind of leads that are incorporated in the document prepared by Dr. Mider. It is clear that if we include in our diet substances that induce cancer when included in the diet of test animals, we are taking a risk. In the light of the rising number of cases of cancer, why should we take that risk? Why shouldn't the Government do everything possible to see to it that we do not involuntarily take that risk? The purpose of our food and drug laws, as Justice Frankfurther put it, is to touch "phases of the

lives and health of people which, in the circumstances of modern industrialism, are largely beyond self-protection," and, as Judge Hastie put it, the Government may reasonably decide to take action which will not subject the public "to even slight risks."

Some of the opposition, Mr. Chairman, to inclusion of an anticancer provision in the proposed color additives amendment arises out of a misunderstanding of how this provision works in the food additives amendment.

It has been suggested that once a chemical is shown to induce a tumor in a single rat, this forecloses further research and forever forbids the use of the chemical in food. This is not true. The conclusion that an additive "is found to induce cancer when ingested by man or animal" is a scientific one. The conclusion is reached by competent scientists using widely accepted scientific testing methods and critical judgment. An isolated and inexplicable tumor would not be a basis for concluding that the test substance produces cancer.

It has also been suggested that when a compound shown to produce cancer in test animals has been modified in chemical structure so that it no longer produces cancer, it continues to be incriminated by its past history. This, too, is erroneous. The Food and Drug Administration would—and should—take a close look at the modified compound to be certain that it did not have the same cancer potential as its parent. But once convinced that the cancer potential had been eliminated, the anticancer clause would not preclude use of the substance.

Finally, doubt has been expressed about the authority of the Department to reverse a decision in this area. This, of course, is an unfounded doubt. When new evidence is presented the Department has not only the right, but the obligation, to evaluate this evidence and determine whether a previous decision should be reversed.

This, I believe, is as far as our discretion should go in the light of present scientific knowledge. We have no basis for asking Congress to give us discretion to establish a safe tolerance for a substance which definitely has been shown to produce cancer when added to the diet of test animals. We simply have no basis on which such discretion could be exercised because no one can tell us with any assurance at all how to establish a safe dose of any cancer-producing substance.

Unless and until cancer research makes a breakthrough at this point, the principle in the anticancer clause is sound.

Some suggestions have been made that a scientific commission should be established to explore the soundness of the conclusion that it is impossible to set a safe tolerance for a substance which definitely has been shown to produce cancer when added to the diet of test animals. Certainly we would have no objection to the establishment of such a commission. I want to make it perfectly clear, however, that while such a commission is deliberating, the law as it now stands would be enforced unless a law should be passed directing us to follow another course of action. Also I want to make it perfectly clear that, in the absence of an anticancer clause, we believe that we have the authority to apply the policy that is reflected in the clause. Furthermore, until we are advised to do otherwise by those who are devoting their lives to the field of cancer research, this is the policy that we will follow.

But, even though we have the authority we urge the Congress to join with the executive branch in giving added assurance to the consuming public by including the anticancer clause in the proposed color additives amendment. In this manner the Congress would be reaffirming the sound position that it took in including an anticancer clause in the food additives amendment.

Mr. Chairman, as I indicated earlier in my testimony, I am prepared to report to the committee on two recent actions that we have taken in conformity with the policy set forth in the anticancer clause of the food additives amendment; namely, actions taken in the case of cranberries and also in the case of poultry. I will be glad to make this report in whatever manner the committee desires. I can present it right now as a part of this opening statement or it could be inserted in the record at this point—whatever your pleasure may be.

The CHAIRMAN. Mr. Secretary, in view of the fact that you are requesting the same provision of law and the same policy be included in the proposed legislation under consideration that was included in the food additives law, a lot of questions will be raised. Therefore, in order that the committee may have the benefit of your experience in the administration of that law, I think it would be helpful for you to give that report at this time.

Secretary FLEMMING. Thank you, Mr. Chairman. I will be very happy to do so.

First of all, Mr. Chairman, I will deal with the question of aminotriazole in cranberries.

In January 1956 the Food and Drug Administration learned of the possible use of aminotriazole on cranberry bogs in New England. The ability of the cranberry plant to absorb aminotriazole from the soil and deposit it in the fruit was known to the Food and Drug Administration at this time.

In March 1957 the Department of Agriculture requested the Food and Drug Administration to comment on data submitted by the American Cyanamid Co. in support of its application for registration of aminotriazole for use in the culture of corn, soybeans, apples, and cranberries, on a no-residue-in-crops basis.

In April 1957 the Food and Drug Administration replied, advising that the chronic toxicity data were too meager to warrant conclusions and counseling against registration.

In July 1957 there was recognition by the National Cranberry Association that aminotriazole had been used during the 1957 cranberry growing season. In a letter to its members, the association stated that its executive committee recognized that aminotriazole was not an approved product.

At this point the Food and Drug Administration investigated a report that aminotriazole was being used on cranberry bogs in New England. A limited investigation indicated that use was confined to cranberry bogs not yet bearing or to old weedy bogs that would not be harvested.

In October 1957 the Food and Drug Administration received a report that aminotriazole was being used on cranberry bogs in Washington and Oregon. At that time the Department of Agriculture advised, in reply to our inquiry, that aminotriazole had not been registered.

An investigation by the Food and Drug Administration in the Northwest in November of 1957 disclosed extensive use of aminotriazole in both the Washington and Oregon cranberry areas during the 1957 growing season. It was determined that aminotriazole had been used on 650 acres, or 40 percent of the total Northwest crop under control of the National Cranberry Association. It was our information at the time that all growers in the area were members of the association. We learned that all lots of cranberries suspected of contamination with aminotriazole were being accepted by the association but were being tagged and held. At this time, 2,460,000 pounds had been so segregated.

In January 1958 aminotriazole was registered on a non-residue basis by the Department of Agriculture for use on cranberry bogs. The registered label directed use of 8 pounds per acre to be applied 7 to 10 days after harvest.

In March 1958 the Food and Drug Administration received several inquiries on behalf of the Wisconsin Cranberry Association about the status of use of aminotriazole on cranberries, in view of registration by the Department of Agriculture. In reply, the Food and Drug Administration explained the provisions of the pesticide amendment, to the effect that no request for a tolerance for aminotriazole had been received, and that in the absence of a tolerance, cranberries containing any residue of aminotriazole would be illegal for shipment.

In April 1958 the Food and Drug Administration received from American Chemical Paint Co., Ambler, Pa., a petition for a tolerance for aminotriazole on cranberries, apples, and pears. A tolerance of 0.7 part per million was requested for cranberries (directions calling for use not later than 10 days after harvest).

The Food and Drug Administration advised the petitioner that the petition was incomplete and could not be filed because of lack of complete toxicity data. In May the petitioner acknowledged this insufficiency of data and requested suspension of its petition pending completion of toxicity studies.

In January 1959 the National Cranberry Association inquired about the status of aminotriazole for use on cranberries, with reference to:

(*a*) Some $350,000 worth (about 3 million pounds) of 1957 cranberries with aminotriazole residues; and

(*b*) Possible use of aminotriazole on the 1959 crop.

The association was advised of the suspended status of the request for a tolerance for aminotriazole and the fact that no tolerance could be established without additional toxicity data.

In February 1959 Amchem Products, Inc. (formerly American Chemical Paint Co.) and American Cyanamid Co. jointly petitioned for a tolerance of 1 part per million of aminotriazole on apples, pears, and cranberries.

For cranberries, the petition stated the recommendation of—

8 to 16 pounds per acre from time cranberry vines begin their new season growth until just before the flower buds begin to show pink.

Notice of the filing of this petition was published in the Federal Register of March 21, 1959.

The Department of Agriculture advised that aminotriazole would be useful in agriculture and that the proposed uses would reasonably result in residues within the tolerance requested.

In April 1959 the National Cranberry Association inquired, with reference to the requested tolerance for aminotriazole:

(*a*) Whether the 3 million pounds of 1957 cranberries bearing aminotriazole residues could now be marketed, and

(*b*) Whether aminotriazole could be used on cranberry bogs in 1959 up until the flower set.

The Food and Drug Administration answered "No" to both questions, explaining that no tolerance for aminotriazole had yet been established and that the toxicity data had not been fully evaluated.

In May 1959 the Food and Drug Administration's Division of Pharmacology concluded as follows:

The requested tolerance of 1 part per million of aminotriazole on apples, pears, and cranberries should not be established, as the pathological study shows undoubtedly that this compound is a carcinogen.

The Food and Drug Administration has prepared for me a summary of the evidence on which this conclusion was based, which reads as follows:

The Food and Drug Administration found in its own laboratories on feeding high dosages of the weed killer to rats for 19 weeks that there was stimulation of abnormal growth of the thyroid gland. It was, therefore, suggested to research workers of the American Cyanamid Co. that particular attention be given to the effect of the chemical on the thyroid. Food and Drug Administration scientists consulted with the American Cyanamid researchers as the studies progressed. When the studies were completed, results were submitted to the Food and Drug Administration along with the petition for a tolerance. Food and Drug Administration scientists reviewed all of the data carefully and examined some of the tissue slides made from the thyroid of the treated rats and of the untreated control rats in order to confirm the type of injury reported.

The research done by the American Cyanamid Co. included:

(1) Acute toxicity studies in rats and cats. The lethal dose by mouth for half of the experimental animals (rats) was found to be 25 grams per kilo of body weight.

(2) Subacute toxicity studies on rats. These showed an increase in size of the thyroid after feeding at 50, 250, and 1,250 parts per million in the drinking water for 106 days.

(3) Chronic feeding studies on rats and dogs. Tests were terminated on dogs at the end of 1 year. No effects on the thyroid in dogs were reported. Rats were fed for 2 years at 100, 50, and 10 parts per million. Thyroid tumors began appearing at the 68th week of feeding at 100 parts per million. At 2 years, according to the summary and conclusions in the company's petition for tolerance, thyroid tumors were present in more than half of the rats examined which had been fed 100 parts per million of aminotriazole in the diet. These tumors were diagnosed as various types of adenoma and carcinoma. At lower levels of feeding, 50 and 10 parts per million, thyroid tumors also appeared in decreasing number. A "no effect" level was not established.

In the light of these findings, reported by the petitioner, aminotriazole is a carcinogen. In addition, it is a highly potent antithyroid drug.

That is the end of the quotation.

The Food and Drug Administration advised the petitioners of its conclusion that aminotriazole is a carcinogen and that a zero tolerance would be established unless, as provided by regulation, the petition was withdrawn by June 15. Petitioners were further advised that if they disagreed with this decision, they could ask—and this is a provision of the law—that the matter be referred to an advisory committee, to be selected by the National Research Council as provided by the pesticide amendment.

On June 8, Amchem Products, Inc., and the American Cyanamid Co. withdrew their petition. They did not ask for the appointment

of this scientific committee. Notice of withdrawal was published in the Federal Register of July 1, 1959.

At this time the Food and Drug Administration began work to perfect the analytical method for detecting aminotriazole to a point where it would be satisfactory for law-enforcement purposes.

Representatives of the National Cranberry Association visited the Food and Drug Administration in June and were advised orally (later confirmed in writing) of the conclusion of the Food and Drug Administration that aminotriazole is a carcinogen and of the fact that a tolerance had, therefore, been denied. Later on, they discussed with the Food and Drug Administration various problems relating to the disposition of the 3 million pounds of the 1957 crop which were still being held. Proposals for sampling and analysis to determine whether any portion of the segregated berries was free of aminotriazole were discussed.

In July 1959, the Food and Drug Administration began an investigation to determine whether aminotriazole had been used on 1958 or 1959 crops in such a way as to contaminate cranberries.

By September the investigation had developed evidence that much aminotriazole had been used in the Oregon cranberry area, probably postharvest in 1958 and during the growing season of 1959. The National Cranberry Association furnished to the Food and Drug Administration a copy of a grower's affidavit form they intended using for the 1959 crop, in which each grower would be asked to state whether he had used aminotriazole and, if so, the manner of use, that is, postharvest or during growing season.

In October 1959 the Food and Drug Administration stepped up its field investigation in Washington and Oregon, with growing evidence of widespread use of aminotriazole in both areas postharvest in 1958 and during the 1959 growing season. By this time the Food and Drug Administration's Seattle district office had perfected the laboratory method for detecting and measuring aminotriazole to a point where it would be adequate for law-enforcement purposes. Shipments of 1959 Northwest cranberries were sampled for examination for aminotriazole.

Also during October, officials of the National Cranberry Association again visited the Food and Drug Administration to discuss the status of cranberries contaminated with aminotriazole. They were advised that shipment of such cranberries interstate would be illegal. They in turn advised that all suspect lots were being set aside for examination by the association and that contaminated lots would be destroyed.

In late October and early November a number of stories ran in the Pacific Northwest papers and in at least one trade journal reporting on the misuse of aminotriazole, the fact that contamination with aminotriazole had been found in 1957 cranberries, that aminotriazole had been found to cause cancer in test animals, and that the Food and Drug Administration was investigating the current crop. At this time the burying of the 3 million pounds of cranberries from the 1957 crop was getting underway at Albany and Coquille, Oreg., and Centralia and Markham, Wash.

During the week of November 2, additional press inquiries were received about the situation, and it appeared likely that questions on the

subject would be received at my regular news conference which would normally be held during the week beginning November 9.

On November 6, 1959, my staff and the Food and Drug Administration were considering whether I should issue a statement explaining that the destruction of the 3 million pounds of cranberries was a commendable voluntary self-policing action by the cranberry industry and pointing out the relationship between this activity and the anticancer amendment concerning which I had received inquiries.

In checking the current situation with the Seattle district of the Food and Drug Administration, however, it was learned that 2 shipments of the first 7 examined from the 1959 Northwest production had shown contamination with aminotriazole and that preliminary tests on samples from 12 additional lots which had not yet been shipped showed probable additional contamination.

On Saturday, November 7, these new developments were discussed with Commissioner Larrick. It was decided that we should call Food and Drug Administration officials and the executive vice president and general manager of the National Cranberry Association, Mr. Ambrose E. Stevens, to get additional information about:

(1) The extent of misuse of aminotriazole in 1959 in cranberry growing areas other than Washington and Oregon.

(2) The full extent of either use or misuse of aminotriazole during 1958.

(3) The extent of any voluntary testing of the 1958 crop by the National Cranberry Association.

(4) The effectiveness of the current self-policing program of the National Cranberry Association to make sure that no contaminated cranberries under its control would reach the market.

Attempts were made to reach Mr. Stevens throughout the day, and he was finally reached about 10 p.m. on November 7. Mr. Stevens was told of the facts we had at that time, and, in response to our questions, gave the following information:

(1) That the association was aware that there had been some misuse of aminotriazole during 1959, particularly in the Northwest but not confined exclusively to the Northwest.

(2) That the association was requiring each grower to submit an affidavit that he had not used aminotriazole, or, if he had, that the use was only in accordance with authorized instructions. Berries from any grower unwilling to sign such an affidavit or from any grower suspected of falsifying an affidavit were being voluntarily withheld from the market by the association, pending examination for aminotriazole.

(3) That the association had made no checks of the 1958 crop for contamination and had not required any growers' affidavits in 1958. It was assumed that the 1957 loss of 3 million pounds of cranberries, coupled with the association's warnings against misuse of aminotriazole, had corrected the situation which led to the 1957 contamination.

Upon receiving this information, the Food and Drug Administration's Seattle district was again called (12 midnight, November 7, District of Columbia time) to get further information and to ascertain the effectiveness of the association's voluntary program in that area.

The Food and Drug Administration's Seattle district confirmed that the association did indeed have such a program, but said that the program was not fully effective as shown by the fact that contamination had been found in 1959 berries shipped by the association.

On Sunday, November 8, Commissioner Larrick advised me of the new facts. It was decided that all of the facts should be made public and that an all-out attempt should be made to check 1958 and 1959 cranberries from Oregon and Washington and to segregate any found to contain aminotriazole.

Mr. Stevens was again called on November 8 (about 7:30 p.m.) and advised of our decision. He was asked whether we would be authorized to say that the association would cooperate fully in a program to assure that the public would not be exposed to contaminated cranberries.

Mr. Stevens said that he would urge against our making any statement to the press on the subject; that he was certain that the association would be most cooperative; but that he could not speak for the association in authorizing the Secretary to make any statement as to what the association would do.

On Monday, November 9, Mr. George C. P. Olssen, president of the National Cranberry Association, called me to discuss the situation. While Mr. Olssen urged against any immediate statement to the press, he agreed that if a statement had to be made, I was authorized to state that the association would try to develop a plan to segregate contaminated berries from those not contaminated.

The decision was made that the factual situation should not be withheld from the public.

Copies of my November 9 statement and all of the subsequent releases on the subject, including the transcript of the public meeting held on November 18 to discuss the plan submitted by the association for segregating contaminated berries, are available for the record if so desired.

Subsequent developments have confirmed the conclusion we reached on November 9 that aminotriazole was likely to be found in the 1958 and 1959 cranberries on the market, including cranberries from areas other than the Pacific Northwest. Up to now the Food and Drug Administration has instituted seizure action against 30 lots totaling 325,800 pounds of cranberries and cranberry products found contaminated with aminotriazole.

The Food and Drug Administration has tested and cleared a total of 33.6 million pounds of cranberries found free of aminotriazole. Under the plan worked out with the cranberry industry, containers from lots so tested are authorized to be labeled:

Examined and passed by the Food and Drug Administration of the U.S. Department of Health, Education, and Welfare.

Likewise, under this plan, packers and distributors of cranberries tested and cleared by independent laboratories using approved methods are authorized to place the following statement on containers:

Certified safe under plan approved by U.S. Government for cranberries.

Signed_____
(Name of company)

The objectives of this testing and labeling plan, of course, were to eliminate any public risk from consumption of contaminated cran-

berries and to enable the consumer to identify and purchase with confidence the cranberries which had been tested and found free of aminotriazole.

I should like to say this was the first time in the history of the Food and Drug Administration that they had authorized the use of labels of this kind.

Next I will discuss stilbestrol in poultry.

Diethylstilbestrol—stilbestrol for short—is a synthetic hormone-like substance with estrogenic or female hormone activity. Hormones are chemical substances produced inside the animal's body and secreted into the blood stream. They help regulate such body processes as growth, rate of gain, and milk secretion. They are responsible for sex characteristics and other body attributes.

In 1941, acting under the new drug section of the 1938 Federal Food, Drug, and Cosmetic Act, the Food and Drug Administration permitted 11 firms to begin marketing stilbestrol for clinical use. The drug is now widely used in medicine, subject, of course, to strict supervision by a physician.

In May 1945, the Food and Drug Administration received the first "new-drug application" for the use of stilbestrol pellets in poultry.

(A "new-drug application" must contain, among other things, reports of animal tests, clinical studies, or other research to show that the drug will be safe under the proposed directions and conditions of use. In the case of veterinary drugs, the Food and Drug Administration has interpreted this section to require that evidence be produced to show that no residue of the drug remains in human food products derived from the treated animals. If the evidence is convincing, the application is allowed to "become effective" and the drug may be marketed. If the evidence of safety is not convincing, the application is denied, and marketing of the drug in interstate commerce is a violation of the law.)

Directions for use called for implanting the pellet under the skin at the base of the skull of poultry, so that any unabsorbed pellet residue would be removed with the head at the time of slaughter.

This application was permitted to "become effective" on January 30, 1947, after almost 2 years of study. It was known then that stilbestrol had been shown to produce cancer in test animals by oral administration. However, at that time it was believed that no significant residues of the drug would remain in the edible tissues of the treated birds.

Several additional applications covering similar products and uses were subsequently made effective, and as of last November it was estimated that about 1 percent of the poultry going to the market had been treated with stilbestrol.

In 1950–51, a select committee of the House of Representatives under the chairmanship of the Honorable James J. Delaney, conducted an investigation of chemicals used in foods. During this investigation, a representative of one of the manufacturers of stilbestrol for implantation testified that evidence had been developed showing that minute amounts of stilbestrol remain in the liver of treated birds. The residue was thought to be of the order of 20 to 40 parts per billion. Although the interpretation of the data was questionable, the amount of residue was considered for all practical purposes the same as zero. These data were submitted to the De-

partment as assurance that no residue would remain in the edible parts of the bird.

There was conflicting testimony before the Delaney committee regarding the safety to the the consumer of stilbestrol-treated poultry.

In 1945, an application was permitted to become effective for the marketing of stilbestrol for addition to the feed of beef cattle. Evidence submitted with the application showed no detectable residues in the meat of the animals when the treated feed was withdrawn 48 hours prior to slaughter as called for in the directions.

Since then many similar applications have been made effective. All are based on absence of detectable residues in meat from the treated animals.

It is estimated that 80 to 85 percent of the beef cattle are now fed on feed containing stilbestrol. Commercial feeding and slaughtering practices are such that there is every reason to believe that directions for withdrawal of the medicated feeds at least 48 hours before slaughter are followed and that meat is, therefore, free of detectable residues of stilbestrol.

In December 1955, the Food and Drug Administration permitted the marketing of stilbestrol pellets for implantation in the ears of beef cattle and, later on, for implantation in the ears of sheep. Evidence submitted showed that this use resulted in no detectable residues in meat of the treated animals. Directions for use, as specified in the application, state that the ear is not to be used for food for man or animal.

By 1957 a reliable method of assay for diethylstilbestrol in animal tissues had been developed, and the Food and Drug Administration applied this method to learn whether the supposed zero levels were actually being achieved in cooked beef and poultry. This experience showed that there was no residue in beef, but it confirms the presence of 20 to 30 parts per billion of residues in the liver and 35 to 100 parts per billion in the skin fat of treated chickins.

When this evidence had been accumulated in 1957, the Commissioner of Food and Drugs posed the problem to his scientific advisers whether it could be shown scientifically that these minute residue levels were unsafe. He concluded on the basis of evidence available at that time that the new-drug applications could not be revoked. In an action to revoke a new-drug application which has been made, the burden of proof shifts to the Government to prove the drug unsafe.

In September 1958, Congress enacted the food additives amendment to the Federal Food, Drug, and Cosmetic Act. That amendment in effect prohibited the Food and Drug Administration from approving any new applications for the addition of stilbestrol to animal feed—a "food" under the law—or for any veterinary drug uses which leave residues in the edible parts of treated animals

In May 1959, the Food and Drug Administration published a statement of policy implementing this prohibition in the food additives amendment and stating that prior authorization for the use of veterinary drugs would be reviewed to determine whether revocation or other action was required in the proper administration of the act.

Following the May 30 policy statement, the Food and Drug Administration undertook an intensive reexamination of the use of stilbestrol in the raising of beef cattle, sheep, and poultry.

That review was completed in early December, and from it the following facts relative to the use of stilbestrol in poultry stood out:

1. That the distribution of stilbestrol by authorized producers for use in the poultry industry had been in compliance with the rules and regulations of the Food and Drug Administration. The approval of stilbestrol-treated poultry by the Food and Poultry Inspection Services of the Department of Agriculture had been in complete harmony with the decisions of the Food and Drug Administration.

2. That the use of stilbestrol in the raising of poultry had been confined almost exclusively to chickens, and only about 1 percent of the chickens then on the market had been treated with stilbestrol.

3. That there was incontrovertible evidence, developed since the original authorizations for the use of stilbestrol in poultry were granted, that very small residues are present in poultry treated with this substance; that there was, however, no evidence of any such residues in the edible portions of beef, lamb, or mutton treated in accordance with approved directions with stilbestrol pellets or raised on feed containing stilbestrol.

4. That residues in treated poultry were confined to the skins, livers, and kidneys of the slaughtered birds, no residues having been found in the white meat or the dark meat of treated birds.

At this point I would like to quote a portion of a statement by Dr. Roy Hertz, Chief of Endocrinology Branch of the National Cancer Institute, who took part in the various discussions relative to stilbestrol:

> Stilbestrol is a synthetic compound which has many of the biological and medical properties of the female sex hormone.
>
> It is known to produce a variety of tumors in several species of experimental animals. However, it can do this only after very prolonged administration which in most instances represents approximately one-third of the lifespan of the test animal. In very rare instances, cancers have risen in patients after very prolonged use of stilbestrol, and some physicians have been led to conclude that stilbestrol was a causative factor in these cases. It would therefore seem desirable to eliminate the hazard, no matter how small, of the prolonged consumption of this material in one's diet from year to year.

On the basis of these facts relative to residues of stilbestrol in poultry, I decided to take the following steps:

1. To request that the authorized manufacturers of stilbestrol for use in poultry immediately suspend the sale of this product.

2. To request representatives of the poultry industry and the retail food industry to arrange for the immediate discontinuance of the sale of treated birds to consumers.

I therefore asked the drug manufacturers and representatives of the poultry and retail food industries to meet with me to discuss the situation, and this was done on December 8 and 9, 1959.

As a result of these conversations, we were convinced that the treated poultry on the market could be identified and would be withheld from sale and that the manufacture and sale of the drug for the treatment of poultry would be discontinued.

We were therefore able to reassure the public at the same time we announced our conclusion that stilbestrol should no longer be permitted as a residue in poultry, that the poultry on the market could be purchased with confidence that it was safe and wholesome.

The Department of Agriculture was kept currently advised of our discussions with industry representatives and was able to announce

concurrently with our statement that it would buy the treated poultry which would be withheld from the market as a result of our announcement. A copy of my statement of December 10 to the press is submitted for the record.

Checks by the Food and Drug Administration in retail poultry markets during the following week revealed prompt compliance with the plan as announced. I was therefore able to reply on December 18 to inquiries I had received that I felt justified in again assuring consumers, as I had done on December 10, that they might buy poultry then on the market with confidence that it was safe and wholesome.

At this time I would like to call attention to the remainder of the statement by Dr. Roy Hertz, part of which I quoted above:

> The early removal of hormone-treated poultry from the market will effectively eliminate the continued exposure of the consumer to this potential hazard.
>
> It is important to bear in mind that the use of stilbestrol for agricultural purposes has no bearing whatsoever on the use of this drug in the practice of medicine. Medical use of stilbestrol was first authorized in 1941. The drug can only be sold on a physician's prescription and therefore is administered only under medical supervision.
>
> It is generally agreed among physicians that drugs of this type are quite useful in the control of the symptoms of many patients without significant hazard under the usual conditions of clinical practice.

And again I would like to emphasize that the action taken in respect to stilbestrol was not the result of any violation of the Federal Food, Drug, and Cosmetic Act.

The Food and Drug Administration has issued notices of intent to revoke all of the outstanding new-drug applications for the use of stilbestrol for implantation and injection in poultry. All but three of the holders of these applications have requested voluntary suspension of their applications. The three have requested hearings on the matter, and a prehearing conference was held on January 11. These three firms have agreed to a consolidated hearing for the taking of all evidence and have stipulated that no further distribution will be made pending the outcome of the hearing. On motion for the respondents, a continuance of the prehearing conference to March 29, 1960, had been granted to allow additional time for the preparation of their case.

The hearing is scheduled for April 12, 1960.

Mr. Chairman, I would now like to discuss certain proposed changes in the law.

On the basis of recent experience, the Department is developing two proposed changes in the Food Additives Amendment of 1958.

To put these proposed changes in perspective, it is necessary to keep in mind two provisions of the food additives amendment.

The Delaney clause in the Food Additives Amendment of 1958 provides—

> that no additive shall be deemed to be safe if it is found to induce cancer when ingested by man or animal, or if it is found, after tests which are appropriate for the evaluation of the safety of food additives, to induce cancer in man or animal.

However, another section of the act, commonly referred to as the "grandfather clause," exempts from the definition of a "food additive," any substance used in accordance with a sanction granted under the Federal Food, Drug, and Cosmetic Act or certain other laws prior to the enactment of the food additives amendment.

There is an inherent contradiction in these two provisions.

In the case of drugs granted prior approval under the new-drug section of the act, the sanction or approval may be revoked or withdrawn only under the following conditions:

1. If the original application contained an untrue statement of a material fact.

2. If the Government can establish that the drug in question is unsafe. In the language of the Food, Drug, and Cosmetic Act, the Government must prove that the drug is unsafe on the basis of "clinical experience, tests by new methods, or tests by methods not deemed reasonably applicable" when the new-drug application was originally approved.

Thus, the "grandfather clause" has this effect: If a particular drug is found, for example, to induce cancer in test animals when added to their diet, prior approvals for the use of this drug cannot be revoked unless the Government proves the drug to be unsafe, even though its safety has become doubtful. In this instance, the "grandfather clause" is in conflict with the public health objective of the food additives amendment—which is to resolve any reasonable doubt as to safety in favor of consumer protection—and with the principle also of the Delaney clause of the amendment.

The Delaney clause bars a substance for use in food if it is—

found to induce cancer when ingested by man or animal, or if it is found after tests which are appropriate for the evaluation of the safety of food additives, to induce cancer in man or animal.

Certainly the operation of the "grandfather clause" is contrary to the basic principle of this anticancer clause.

Also, the "grandfather clause" in operation creates this inequity: If scientific tests show that there is reasonable doubt as to the safety of a certain drug, new applications for permission to market this drug are automatically rejected. On the other hand, unless and until the drug is proved to be unsafe by the Government, holders of prior approvals may continue to market the drug under the protection of the "grandfather clause."

When there is reasonable doubt about the safety of a drug or other substance used as an additive for food, we believe the "grandfather clause" should no longer apply and that the substance should have to meet the same standards of safety as apply under the food additives amendment to all other substances.

We also believe the Delaney clause should be modified to provide that additives used in animal feed which leave no residue either in the animal after slaughter or in any food product obtained from the living animal be exempt from the provisions of the clause. A comparable amendment to the anticancer clause in the color additive legislation under consideration would be appropriate.

If it can be demonstrated that a chemical or drug that induces cancer in animals when added to their diet can be used in such a manner that it does not harm the animal and so as to leave no residue in food consumed by man, the Department should be in a position to approve its use.

Certainly the use of a specific drug cannot be characterized as hazardous to man if there is no carcinogenic residue in the food which he consumes.

The Department is developing modifications of the food additives amendment to carry out the objectives outlined above. These changes would at once strengthen the food additives amendment and make it more equitable in operation. They would, in effect, tailor the amendment to the rapid developments, of which all of us are aware, in the food and drug field.

We are also developing a corresponding modification of the anticancer clause in the pending color additives legislation.

Meanwhile it is the aim of the Department to administer the food additives amendment of 1958 in such a way as to help maintain the present high standard of our national food supply. In so doing we will preserve the present high level of consumer confidence which, in turn, is of such vital importance to the well-being of America's food producers.

In summary:

(1) We believe that the Congress should enact color additives legislation that will (*a*) provide the consumer with better protection by placing the burden of proof to establish the safety of colors on the manufacturer; and (*b*) grant to the executive branch authority to approve the use of colors in amounts that are found to be safe.

(2) We believe that the proposed color additives legislation should include an anticancer clause that makes illegal the use of any substance that will induce cancer when included in the diet of man or animal.

(3) We have concluded that such an anticancer clause constitutes sound public policy in view of the fact that no one knows how much or how little of a substance will induce cancer when added to the diet of man if it has been demonstrated that it will induce cancer when added to the diet of a test animal. In other words, if a person includes in his diet substances that induce cancer when included in the diet of test animals, he is taking an unnecessary risk. The Government has a responsibility to see to it that we are not exposed to unnecessary risks of this character. In discharging such a responsibility, the Government can conceivably contribute to a reduction in the mounting number of cancer cases.

(4) We also believe that the Congress should make clear that when we turn down new applications on the ground that the substance does induce cancer in man or animal, we should at the same time be in a position to revoke all outstanding approvals for the use of that substance in food.

(5) Finally, we also believe that we should be authorized to approve the use of a substance that induces cancer in test animals when added to their diet if it can be demonstrated that it can be used in such a manner that it does not harm the animal and does not leave a carcinogenic residuce in the food consumed by man.

The CHAIRMAN. Mr. Secretary, does that conclude your statement?

Secretary FLEMMING. It does, sir.

The CHAIRMAN. You certainly have given a very full and complete statement on a subject that has been perplexing a lot of people, and one that has a lot of meat and information in it. I assume there will be a good many questions raised, although I do not know just to what extent. It is now almost 12 o'clock. I wonder if it might not be better to recess for the noon hour and come back at, say, 1:45. Would that be agreeable to you, Mr. Secretary?

Secretary FLEMMING. Yes, indeed, Mr. Chairman. Whatever is your pleasure.

The CHAIRMAN. If we were to get started now, we would soon get to the point where we would have to break up. Therefore this would be a good place to adjourn for lunch.

The committee will recess until 1:45.

(Whereupon, at 11:50 a.m., the hearing was recessed until 1:45 p.m. of the same day.)

AFTERNOON SESSION

The CHAIRMAN. The committee will come to order. Before we start the questioning of the Secretary, I have had the occasion to look over the prepared manuscript of Dr. Mider the Associate Director in Charge of Research, National Cancer Institute, National Institutes of Health. Since it has been referred to in a summary that was put in the record, and since it includes a rather complete story as reported by Dr. Mider, I think it should be included in the record. So, without objection it will go in the record at the appropriate place.

Secretary FLEMMING. Thank you very much, Mr. Chairman.

The CHAIRMAN. Mr. Hemphill, do you have any questions?

Mr. HEMPHILL. No questions. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Younger.

Mr. YOUNGER. Yes, Mr. Chairman. Mr. Secretary, as regards the question of applying the test to any of the substances used in insecticides, or additives, have all of them been tested as to cancer?

Secretary FLEMMING. Mr. Congressman, and Mr. Chairman, taking the pesticides side of the amendment first, if I may do so——

Mr. YOUNGER. Yes.

Secretary FLEMMING. About 110 pesticides have been cleared, authorized, or certified as safe by the Food and Drug Administration. That means, of course, that that authorization includes the question of whether or not they are carcinogenic, or whether or not they do induce cancer.

On the food additives, Mr. Chairman, I think possibly the best way I could respond to that question would be to present a brief statement to the committee indicating just where we are in the administration of the food additives amendment, particularly in relation to the March 6 deadline. Would this be an appropriate time for me to present that, Mr. Chairman?

The CHAIRMAN. Yes. Any time is appropriate because there is so much interest in it. The packaging and container industry, as well as some in the chemical industry, are fearful of what is going to happen to them this coming March 6.

Secretary FLEMMING. All right.

The CHAIRMAN. And are trying to do something about that.

Secretary FLEMMING. It seems to me that would be the best way to respond to your question, Congressman Younger, and it would probably provide information for the record that would be helpful to members of the committee, because I know many members of the committee are getting questions along the line you indicated.

On March 6 next, any food additive now in use must be discontinued unless it has been cleared for safety under the new procedure, or it has been granted a specific extension of time. The law provides for an extension of up to 1 additional year where the extra time "involves

no undue risk to the public health and conditions exist which necessitate the prescribing of such an additional period."

In order to expedite the orderly clearance of food chemicals under the law, we first undertook to exempt as many as possible of the chemicals "generally recognized" as safe, so that manufacturers would know that no further testing of these chemicals is necessary. About 230 commonly used chemicals have already been fully exempted, and lists are nearing completion proposing exemption of about 160 additional chemicals, including 86 components of packaging materials which have been granted prior approval.

We have received 77 petitions for safety clearance of additives; 36 of these contained the required data and were accepted; we have issued, or are in the process of issuing, orders on 17 of these; and 41 were incomplete or have just been received. Most of those not yet acted upon were deficient in that they did not contain a suitable test by which a tolerance could be enforced. In all of these cases where only a methods deficiency exists, it will be our purpose to grant an extension of time if the data are otherwise convincing that the continued use will involve "no undue risk to the public health."

We have received 34 requests for extension of time, of which 1 for carbon black and charcoal as coloring agents has been granted. We have published a statement of the information which must be submitted in order to obtain an extension of time, which includes the following:

This was included in the Federal Register of December 31, 1959, and has also been released—

(1) The name and chemical composition of the food additive for which extension is granted.

(2) The uses for which extension is requested and what the intended physical and technical effect of the additive is in such foods.

(3) The amounts of the food additive expected to remain in the foods.

(4) Why a food additive regulation has not been requested, if no request has been made.

And most important, of course, we will need evidence indicating that the proposed uses of the additives will not jeopardize the public health. We have stated that we will grant no extension for any food additive which has been found to induce cancer when ingested by man or animal, or which has been found after tests that are appropriate for the evaluation of the safety of food additives to induce cancer in man or animals.

We have a considerable backlog of unanswered technical correspondence from the food and chemical industries, amounting to some 415 letters, most of which were received during December and January. However, we have recently tripled our staff on additives work, and, as we settle certain problems, many letters are automatically taken care of. For example, one firm has 14 letters on can liners, and the decision reached on these forms a basis for answering several letters from other firms on the same subject. And we know that many of the inquiries are about items that are not food additives. It is our goal to get answers to these inquiries before the effective date.

We have special problems involving two classes of additives:

The first has to do with artificial flavorings. Through an arrangement with the Flavoring Extract Manufacturers Association made

early last year, that group was to obtain and furnish us with a large amount of basic information on which we could make decisions as to the status of many flavoring chemicals under the law.

A small part of this data has been received, but a great deal more remains to be obtained.

The second is in the field of packaging materials. Some groups in this field have not cooperated with their customers and the Food and Drug Administration in supplying necessary data, whereas others have done an excellent job. Those who have not are now feeling the pinch from their customers, who naturally need assurance that the use of a particular package does not involve the migration of illegal toxic substances to the food they pack.

We know that these problems have led to the conclusion on the part of some industry groups that the effective date of the new law should be extended by Congress.

It is our best judgment, however, that there is not now a need for congressional action to extend the effective date of the law. We see no sound reason why the administrative procedures available to us to achieve this end will not work satisfactorily. Obviously, however, they cannot function until the facts are submitted to us in any particular case. If and when we get facts which indicate that a 1-year extension is not going to be enough, we would then want to consider asking for authority to grant additional time under restrictive circumstances.

As I have previously stated, requests for extension of time will necessarily be considered on the basis of public health considerations. We will give every possible consideration to applications for extension where the extension will not jeopardize the public health and where denial of the extension would impose an unreasonable hardship on the industry.

To sum it up, Congressman Younger, as you can see there is still a good bit of work to be done in this area, although considerable progress has been made, as indicated on the first page of this statement.

Mr. YOUNGER. That is true, Mr. Secretary, and you have granted a lot of clearances.

Secretary FLEMMING. That is correct.

Mr. YOUNGER. Now my question is this: You state:

> We have stated that we will grant no extension for any food additive which has been found to induce cancer when ingested by man or animal * * *.

Has that approach or that test been applied to all of the cases where you have given clearance?

Secretary FLEMMING. That is correct. If we had had any information along that line, of course, we would not have given clearance.

Mr. YOUNGER. That is all, Mr. Chairman.

The CHAIRMAN. Mr. Secretary, pursuing that problem a little further, since it was brought up at this time.

Secretary FLEMMING. Yes.

The CHAIRMAN. First, let me say that I appreciate the fact that you and Commissioner Larrick, and particularly Commissioner Larrick and his staff, are going to meet with a certain group of people on Thursday next in order to try to clarify the status of this problem.

Secretary FLEMMING. Right.

The CHAIRMAN. It is very kind of you to make that arrangement to see these gentlemen in order to get this matter straightened out.

Secretary FLEMMING. May I say, Mr. Chairman, we will also be perfectly willing to meet at that time or at any other time, with other groups that have a concern about this, because I am convinced it can be worked out in a satisfactory manner within the provisions of the present law.

The CHAIRMAN. What seems to be bothering the packing industry is the inability of their scientists to find out whether their products contain food additives. If they have not been able to find out yet that their product actually contains additives I would assume that the alternative would be to extend them some time in working with their scientists, to develop the facts to determine if they do come within that purview.

Secretary FLEMMING. Your assumption is correct, Mr. Chairman. There is no doubt about that at all.

The CHAIRMAN. Thank you very much. Mr. Roberts.

Mr. ROBERTS. No questions at this time.

The CHAIRMAN. Mr. Springer.

Mr. SPRINGER. On page 3, Mr. Secretary, of this statement with reference to progress in clearing safe food additives.

Secretary FLEMMING. Yes.

Mr. SPRINGER. The last paragraph.

Secretary FLEMMING. Right.

Mr. SPRINGER. Page 3, in the last paragraph thereon.

Secretary FLEMMING. This is on the statement I just read on progress in clearing safe food additives?

Mr. SPRINGER. That is right. On page 3.

Secretary FLEMMING. All right.

Mr. SPRINGER. You say there:

> The second is in the field of packaging materials. Some groups in this field have not cooperated with their customers and the Food and Drug Administration in supplying necessary data, whereas others have done an excellent job. Those who have not are now feeling the pinch from their customers, who naturally need assurance that the use of a particular package does not involve the migration of illegal toxic substances to the food they pack.

In the packaging field, how many applications, roughly, have you received altogether?

Secretary FLEMMING. On page 1, Mr. Springer, you will note that I said that:

> About 230 commonly used chemicals have already been fully exempted, and lists are nearing completion proposing exemption of about 160 additional chemicals, including 86 components of packaging materials which have been granted prior approval.

It is my understanding that the number of applications—just one moment and I will check—the total number of applications that have been filed is approximately 100, which includes this 86 to which reference is made on page 1, that I just read.

Mr. SPRINGER. Let me get this for the record so that we will be sure there is no misunderstanding.

Secretary FLEMMING. Yes.

Mr. SPRINGER. This is 100 packagers?

Mr. LARRICK. One hundred compounds.

Mr. SPRINGER. I am asking only about packagers. That is my question.

Secretary FLEMMING. This is 100 components of packaging materials, to use the expression I used in the statement; and of that 100 approximately 86 are about to be cleared. Up to the present time, of that approximately 100, we have only found it necessary to reject about 6.

Mr. SPRINGER. May I ask this question, as I am not familiar with this: When you file a letter, or you file a petition, does a company file that letter or petition?

Secretary FLEMMING. Yes.

Mr. SPRINGER. It does?

Secretary FLEMMING. Yes.

Mr. SPRINGER. My question is, How many companies have filed petitions?

Secretary FLEMMING. Mr. Larrick.

Mr. LARRICK. I am afraid I will have to supply that for the record. I do not know offhand.

Mr. SPRINGER. That is what I want to know. Roughly, is it 20, 40, 60, or 160?

Mr. LARRICK. It would be more in the order of 20, I would guess, but I would rather reserve it because I do not want to give you the wrong answer.

Secretary FLEMMING. We will try to give you that before the hearing is over this afternoon and insert it in the record. I will ask somebody to make a note of that and check it for you.

Mr. SPRINGER. What I want to know is how many packaging companies have filed petitions.

Secretary FLEMMING. All right.

Mr. SPRINGER. And how many companies have had their petitions approved?

Secretary FLEMMING. Yes.

Mr. SPRINGER. How many companies have had their petitions turned down, or rejected, and how many petitions are now pending?

Secretary FLEMMING. We will be very glad to supply that information.

The CHAIRMAN. Will the gentleman yield?

Mr. SPRINGER. Yes.

The CHAIRMAN. Commissioner Larrick, since you have been brought into this directly, I understood you to say yesterday, if I may refresh my recollection, that none of the packaging industry has made any application.

Mr. LARRICK. I checked into the record a little more since I talked to you and we find that there are several packaging people who have made a contact with us. The particular ones you and I spoke of have not, but others have.

The CHAIRMAN. Other packaging people?

Mr. LARRICK. Yes. People that make paper. I would like to clear up with Mr. Springer the fact that they are not all applications or petitions. There are several ways they can get clearance under this law. If they can get us or our scientists to say that the compound is generally recognized as safe, then we can give them their clearance; or, they can go by the petition route, and I assume you want both, Mr. Springer, because they will both be of equal importance.

Mr. SPRINGER. I am sorry. I did not hear that last portion of your statement.

Mr. LARRICK. There are two ways people in the packaging industry can get clearance to go ahead and use the materials. One would be by formal petition. Another way would be for us to become convinced by what we know, or what they tell us, that the compound is generally recognized as safe, in which event we do not have a formal petition but we publish a list in the Federal Register.

Mr. SPRINGER. That is what they do by publishing an approved letter?

Mr. LARRICK. That is right.

Secretary FLEMMING. And you would like figures on both categories.

Mr. SPRINGER. That is right. I want to know where you are on that point.

Secretary FLEMMING. You want the whole story? We will get it a little later on this afternoon and put it in the record.

Mr. SPRINGER. Another thing it is important to know, Mr. Commissioner, is approximately how long petitions have been on file which have not been acted on, if they have not been acted on by your administration.

Mr. LARRICK. You mean in the packaging field?

Mr. SPRINGER. That is right. In other words, how long have those petitions been pending—10 days, 2 months, 10 months, or a year? And we ought to have an answer as to why, if it is not acted on. In other words, make it a little specific.

Mr. LARRICK. Yes.

Mr. SPRINGER. I take it from what you said, Mr. Secretary, that any one company which has acted in good faith and asks for an extension, you feel that extension should ge granted. Is that the general tenor of your testimony?

Secretary FLEMMING. That is correct. Assuming that there is no evidence indicating any health hazard.

Mr. SPRINGER. Indicating any health hazard?

Secretary FLEMMING. Yes.

Mr. SPRINGER. Suppose he had been operating all this time?

Secretary FLEMMING. In other words, if there was evidence indicating there was a health hazard involved, that would obviously have to be weighed by the Food and Drug Administration in determining whether to grant the extension to them.

Mr. SPRINGER. I am using your own words here in line with what your sentiment is as it has been registered here with reference to that, at the bottom of page 3 of your opening statement and at the top of page 4 of that same statement where you said:

> Yet, under the present law, we must continue our tests and assume the burden of proving as to each listed color that it is not harmless before we can take that color off the permitted list. It would take many years for the Food and Drug Administration to complete this testing of the coal tar colors now in use. This burden properly belongs on those who manufacture the colors.

If it is going to take you years to make these tests won't it take that long for the companies also to make the same tests?

Mr. LARRICK. Yes.

Secretary FLEMMING. You are referring now to the food additives law. Yes.

Mr. SPRINGER. With reference to this situation, if it is going to take you years to to it, it is certainly going to take many of these companies a substantial amount of time to do it.

Secretary FLEMMING. Mr. Congressman, there is not any doubt that we do have to allow the companies a reasonable amount of time; and, of course, that is one of the matters that this committee considered when it put in the provision for the effective dates of the law, and when it also made provision for an extension on our part. Of course, I think we should keep in mind the fact that one of the great things about the food additives law is that instead of the total responsibility resting on a single Government agency, the responsibility has been spread out to all of the companies that are involved in this operation. So, obviously, I think with the total resources of industry at the disposal of the country, they can move much faster than it would have been possible for the Food and Drug Administration to have moved if it had to continue to carry the entire load.

But I think that the Congress very wisely gave us the right to take a look at the situation and pass on the individual cases, and determine whether an extension should be granted. If our experience indicates that the year between March 6, 1960, and March 6, 1961, is not long enough, then we will be the first to come in and recommend a further extension. My only point is, at the present time we just do not have a basis for recommending such an extension.

Mr. SPRINGER. The only reason I asked it is my understanding is—and this is informal and I only call attention to the arrangement in the record so that there will be no misunderstanding if it is put in the record—that some of these companies have had extreme difficulty in proving that there is no additive in it. It is a question of research extending over a long period of time and it still has not convinced anyone that it is, one way or the other.

That is the reason why I raised the point, because of those extreme cases.

Secretary FLEMMING. That is right.

Mr. SPRINGER. To be sure that the record was made on that point.

Secretary FLEMMING. Mr. Congressman, that was the point that Congressman Harris made also, as you will recall.

Mr. SPRINGER. Yes.

Secretary FLEMMING. And we indicated in response to his question that under those circumstances we would, of course, grant an extension.

Mr. SPRINGER. Thank you, Mr. Chairman.

Mr. ROBERTS. The gentleman from Michigan, Mr. Dingell.

Mr. DINGELL. Thank you, Mr. Chairman. Mr. Secretary, I would like to compliment you on the splendid job you did this morning and also on what you and your Department have done with respect to the cranberry episode and with respect to the poultry episode you mentioned in your testimony. I also want to compliment you on the general attitude you have had toward the Food and Drug Administration, which I think has been very fine.

Also I want to pay tribute to you for the work you have done on water pollution and the other work done in your Department. I want to mention I will very shortly be contacting you about a water pollution bill which I have introduced.

I was particularly interested in your testimony with regard to the cranberry incident and I wonder if you will tell me and give us, if you can, the effect of an episode like this on the staff of the Food and Drug Administration and on the ability of the Food and Drug Administration to protect the public welfare. Give us some idea, if you can, of the number and percentage of the staff people that were diverted to cranberries alone from other duties.

Secretary FLEMMING. Congressman Dingell I appreciate your comments very much and I will be very happy to respond to the question. As I think you would gather from the testimony I gave this morning, this did place a very heavy load on the Food and Drug Administration. The mere fact that they were called upon in this short period of time to test approximately 30 million pounds of cranberries indicates the magnitude of that load.

I know that we did divert immediately 100 inspectors, was it not?

Mr. LARRICK. Yes.

Secretary FLEMMING. To concentrate them on work in this particular area. I think it is certainly a fair thing to say that during this rather intensive period better than 50 percent of the total resources of the Food and Drug Administration were concentrated on this particular operation. We did want to go just as far as we could possibly go to test as many lots of cranberries prior to the Thanksgiving season and prior to the Christmas season as we possibly could.

In other words, having agreed on the plan, we wanted to do everything we could to make that plan an effective plan, but it did put a very heavy load on the Food and Drug Administration. They work literally morning, noon, and night, and they worked literally 7 days a week in order to do the very best possible job in behalf of the conservants over a considerable period of time, nad this is one of the ing tribute to the work that they did.

As you know, I have had the privilege of working with career civil servants over a considerable period of time, and this is one of the finest examples of the kind of service that it is possible for our country to receive from a group of dedicated career civil servants that I have ever observed.

Mr. DINGELL. I could not agree with you more, Mr. Secretary. I would like to go further than that and ask you this question in a general sort of way because I keep getting the feeling up here on the Hill that the Food and Drug Administration is not getting the number of enforcement people they should have, although it has the highest quality of people, either in the laboratories or as inspectors around the country, in order properly to protect the public welfare.

For years they have needed a laboratory here, which they have not been able to get for budgetary reasons of one sort or another. Are you, in your Department, properly studying the needs of the Food and Drug Administration for additional personnel in order to provide the services that they must?

Secretary FLEMMING. We certainly are, Mr. Congressman, and I am very happy to be able to report that we have made some progress toward the achievement of the kind of an objective that both of us, I am sure, would have no difficulty in agreeing on. For example, as you know, of course, our Department is a new Department, or comparatively new. The first budget for the Department, as a Depart-

ment, was in 1954. At that time the total appropriations available to the Food and Drug Administration were something in excess of $6 million. The budget that is now pending before the Congress calls for appropriations in 1961 of a little bit in excess of $18 million.

Over that period of time it has been possible to increase the number of inspectors and increase the number of scientific personnel materially. You may recall approximately in 1954 a citizens advisory committee was appointed by the first Secretary of the Department, Mrs. Hobby. They filed a report and suggested what they thought would be a reasonable rate of progression in terms of increasing the resources of the Food and Drug Administration. Translated, that means an increase of approximately 15 percent in personnel each year.

Mr. DINGELL. Have you kept pace with that?

Secretary FLEMMING. We have. We are right even with it at the present time. And the new budget will make it possible for us to keep pace with it in 1961. I also agree with your feeling relative to the importance of their having adequate laboratory facilities. As you know, of course, we are very proud of the new laboratory that the Food and Drug Administration has in the city of Detroit. I happened to be there at the time that that was opened and I had the opportunity of going through it.

Also I am glad to say that in the budget for the General Services Administration for 1961 there is included the item needed to construct a new laboratory building here in Washington, D.C. That has been delayed and I personally am sorry it has been delayed, but I am delighted it is in the 1961 budget and I certainly hope nothing will happen to that particular item as it moves through the Congress.

Mr. DINGELL. Let me ask you one more question. You state that this certification of new additives and old additives in food is placing a tremendous strain on your Department, and specifically on the Food and Drug Administration. Is that not correct?

Secretary FLEMMING. That is a fact. That is right.

Mr. DINGELL. Would additional staff people down there help that?

Secretary FLEMMING. I do feel that what has been allowed for in the 1961 budget—and I might say parenthetically that the 1961 budget not only provides for this 15-percent increase to which we have referred, but also it provides for additional personnel in the field of radiological help—I feel what is being requested in the 1961 budget does make it possible for us to move forward in a sound manner to deal with this increasing workload.

Mr. DINGELL. All right. Let me ask you just a little bit different question and then I want to yield the floor, Mr. Secretary, if I may. The bill originally sent up to the Senate was identical to the bill sponsored by the chairman of this committee at this time, was it not?

Secretary FLEMMING. That is correct.

Mr. DINGELL. But somewhere prior to its introduction it lost the so-called cancer clause, or the Delaney amendment as I call it. Is that correct?

Secretary FLEMMING. That is my understanding. Yes.

Mr. DINGELL. Thank you very much, Mr. Chairman and thank you, Mr. Secretary.

The CHAIRMAN. Mr. Schenck.

Mr. SCHENCK. No questions at this time, Mr. Chairman. I do want to commend Secretary Flemming on the various splendid statements he has made this morning.

Secretary FLEMMING. Thank you, Mr. Congressman.

The CHAIRMAN. Mr. Kilgore.

Mr. KILGORE. Yes, Mr. Chairman. Mr. Secretary, in your discussion with respect to the handicap you operate under because of the grandfather clause, and then in summary your paragraph No. 4 on page 25 of your statement has to do specifically with the grandfather clause. Is that right?

Secretary FLEMMING. Yes.

Mr. KILGORE. I am curious to know to what extent the operation of the grandfather clause has been a burden to you. In other words, either in numbers or in specific items, what sort of problems have you encountered that produced a serious health problem.

Secretary FLEMMING. Well, Congressman Kilgore, I am sure from a quantitative point of view it has not presented a serious problem. The matter was called to my attention rather shortly as a result of the problem in connection with stilbestrol. It seemed that a result of that experience we had put our finger on a defect that we ought to ask the Congress to correct. In this particular instance, as you know, we had to turn down new applications for stilbestrol because of the fact that they did come within the purview of the Delaney clause. At the same time, because they had been approved prior to that time, earlier approvals for stilbestrol have remained in effect, and of course we decided to permit them to remain in effect because of the fact that there is no residue in meat from the use of stilbestrol in cattle for feed.

However, it did seem to me that whenever we arrived at a conclusion that new applications should be turned down on health grounds we should be in a position where we could revoke outstanding approvals for the same use because it just does not make good sense to turn down new applications on health grounds and then let old applications remain outstanding, largely because of the fact that under the operation of the new drug section we have to assume the burden of proving they are unsafe.

It does not work this way as far as the informal sanctions for chemicals are concerned, because in the case of a chemical if we turn it down because of the fact that it has, let us say, carcinogenic properties, we can immediately write letters which will cancel out the existing authorizations. It is just that simple. So that part of the grandfather clause does not bother us at all.

I understand the reason why the grandfather clause was put in. It was felt if it was put in it would speed up the administration of the law in the long run. The only point at which we feel it is defective is where it applies over on the new drug section, because there the burden shifts back on the Government and the Government has to assume the responsibility of proving it is unsafe, and we feel if it can be corrected in that respect we would not have any difficulty.

Mr. KILGORE. I certainly follow the logic of your approach to it but I understand that the stilbestrol incident is the only one you have in mind at the moment in which the necessity for this change has been brought to your attention. Is that right?

Secretary FLEMMING. Commissioner Larrick says that it could involve several hundred of small feed mills where there might be some problems in the arsenical area, but still in terms of the numbers of cases I have to say we have not had any large numbers that have come to our attention which involve that.

Mr. KILGORE. I think that is all, Mr. Chairman.

The CHAIRMAN. I am interested in that, if the gentleman will permit. You say it would involve several hundred small feed mills?

Secretary FLEMMING. Yes.

The CHAIRMAN. In what way?

Mr. LARRICK. Under this act, Congressman, you will recall that feed and food are identical. Both feed and food are defined as food under the act. The Delaney clause says nothing that produces cancer when fed to animals can be put into food. That means from now on we cannot allow a diet of stilbestrol in any feed. But the law also says if we gave feed mills an authorized sanction in the years or months that preceded it, and we had authorized them to do it, then we cannot take that away from them with ease.

That brought about a situation in both arsenicals and stilbestrols where a small feed plant on one side of the road who was fortunate enough to have an application that had been put in some years ago and had passed under the old law, could keep right on doing business, but his competitor on the other side of the street is prohibited by law from doing the thing that this man across the street is doing. That makes it very difficult to administer. It is hard to explian to the second man why he cannot do what the first man does. And there are several hundred of these.

The CHAIRMAN. Why would it have to apply only to small feed mills? What about the large ones?

Mr. LARRICK. I just used the word "small." Small and large.

Secretary FLEMMING. It would apply equally to the small and the large, but from a quantitative point of view there are several hundred involved in this situation.

Mr. LARRICK. That is right.

The CHAIRMAN. What interests me in the statement is it would seem as though you are singling out certain small feed mills.

Mr. LARRICK. No.

The CHAIRMAN. And I wondered why they are different from the large feed mills.

Mr. LARRICK. No. I just had more sympathy for the small ones. You are correct.

Mr. KILGORE. Let me ask this further question and see if I understand you correctly. On the enactment of that particular recommendation one of the things which we would anticipate would be that stilbestrol would not thereafter be fed to feed animals. Is that true?

Secretary FLEMMING. No.

Mr. LARRICK. Not at present.

Secretary FLEMMING. No. If you take both of the amendments that we are suggesting together, and if both of them should be approved it would have this effect as far as stilbestrol is concerned. As I indicated in my testimony, the Food and Drug Administration has determined that when stilbestrol is used to feed cattle in accordance

with the instructions, namely, that they are not to go to a slaughterhouse within 48 hours, that leaves no residue in the meat.

We have suggested a possible modification of the Delaney clause which would permit us to approve the use of a substance such as stilbestrol when we determined that you could effectively ascertain that no residue was left in food consumed by man and when we determined that it would not be injurious to the animal during the normal lifespan of the animal.

We feel that under those conditions we should be permitted to approve the use of a substance such as stilbestrol because if no residue of substance appears in the food that is consumed by man it is hard to say that it is hazardous as far as man is concerned.

Mr. KILGORE. That is the way I understood you this morning.

Secretary FLEMMING. That is right.

Mr. KILGORE. But this afternoon I got a different twist and I wanted the record straight on it.

Secretary FLEMMING. No. It does get a little bit confusing on stilbestrol because of the fact that it has worked out in that way, but we feel that the Congress could appropriately give us discretion under those circumstances.

Mr. KILGORE. So that if all of the recommendations were included in the legislation there would be first the automatic exclusion. Then there would be within the control of the Department the authority, if it found there to be no residue——

Secretary FLEMMING. That is right.

Mr. KILGORE. Contained in the food which was marketed, it could then be permitted.

Secretary FLEMMING. That is right. You see, the grandfather clause worked in this way, so that we could not possibly have rescinded the outstanding approvals because here we found as a matter of fact that there is no residue of the stilbestrol in meat. This would have made it impossible for us to prove to the satisfaction of any court that the continued use of stilbestrol was unsafe.

Yet, under the new drug section of the act this is the only way in which we could have revoked outstanding approvals. Of course, we did not move to revoke approvals for stilbestrol in feed for beef cattle because of the fact that we ourselves did not believe it was unsafe. If we did not believe it was unsafe we clearly could not convince any court. But we do feel where we conclude that the use of a particular substance is unsafe because it comes in under the cancer clause, or because it comes in under any other provision of the act—when we do conclude that, then we ought to be in a position where we can revoke outstanding approvals immediately.

Mr. KILGORE. That is all, Mr. Chairman.

The CHAIRMAN. I am tempted to pursue this further, but I believe I will wait until my turn comes.

Mr. Avery.

Mr. AVERY. Mr. Chairman, I appreciate being recognized because I did have a question that would logically follow the colloquy between Mr. Kilgore and the Secretary. I hope I am not being repetitious. I note on page 15 of your statement, Mr. Secretary, you refer to stilbestrol being fed. Would the same conclusion be reached if the stilbestrol was implanted into the beef animal the same as it is in poultry? Would the same conclusions prevail?

Secretary FLEMMING. The conclusion that we have arrived at is that that does not leave any residue in the meat.

Mr. AVERY. Whether it is fed orally or implanted? Either way?

Secretary FLEMMING. That is correct.

Mr. AVERY. I wanted to get that in the record.

Mr. LARRICK. It must be in the ear. It has to be implanted in an inedible part of the animal, and the ear has to be discarded. That is right.

Mr. AVERY. One further question. Is the distinction between poultry and beef in the way they are processed, the beef being skinned. Is that why there is no residue in beef animals as compared to poultry where there is a residue and it is not skinned?

Mr. LARRICK. That would be a conjecture, I know, but I would guess it is because of the difference in the size of the animal. We can measure this material down to two parts per billion and we are testing it by that method, and we find absolutely none in the edible portions of the meat—of the beef.

Mr. AVERY. Getting down to two parts per billion, if I heard you correctly——

Mr. LARRICK. That is right.

Mr. AVERY. It would be physically impossible for anyone to consume enough of it to make it harmful to them—biologically impossible?

Secretary FLEMMING. That brings us back to one of the basic principles I tried to underline in my testimony this morning, Congressman Avery. On the basis of the evidence that has been presented to me by the distinguished scientists at the Cancer Institute as well as those in the Food and Drug Administration, I am convinced that no one knows how much or how little of a substance that induces cancer, when included in the diet of an animal, will induce cancer when included in the diet of man. We not only have to consider that statement but we also have to consider some of the statements in the summary of Dr. Mider's paper that I read, to the effect that there may be a cumulative factor in this picture.

So, as we consider this, I think we have to look at it from both points of view.

Mr. AVERY. If I did not follow you carefully I apologize for imposing on the time of the committee, but I did not understand that from your testimony.

Secretary FLEMMING. No.

Mr. AVERY. I thought you had established some extremes but when you came near the balance point you could not precisely draw the line.

Secretary FLEMMING. As far as carcinogens are concerned, and substances that have those properties, we are advised, as I said, that if they induce cancer—if the substance induces cancer when it is included in the diet of an animal, no one knows how much or how little of it is needed to induce cancer when included in the diet of man. That is one of the leads, as I said, that those who have engaged in research in this field are giving to us. And it seems to me it is a lead to which we should pay attention in the interests of ultimately, I hope, cutting down on the mounting number of cancer cases.

Mr. AVERY. That obviously would be the objective of anybody in the Government and, more particularly, in your Department.

Secretary FLEMMING. That is right.

Mr. AVERY. That is all, Mr. Chairman. Thank you very much.

The CHAIRMAN. Mr. Rogers.

Mr. ROGERS of Florida. Just a question or two. Mr. Secretary, I presume you are familiar with the exchange of letters between Senator Holland and Dr. Larrick in which the Department stated that the ethylene process of coloring sound, mature oranges, is not covered by this proposed legislation since it is not considered as a color additive under the provisions of this bill?

Secretary FLEMMING. That is right.

Mr. ROGERS of Florida. And that the long established coloring of oranges under the ethylene process, and the more recently listed color citrus red No. 2 is not considered as promoting deception, as the term is used in the bill and in the statement in Dr. Larrick's letter on August 20, 1959? Citrus red No. 2, as listed under the provisions of Public Law 86–2, would be deemed provisionally listed under the provisions of this bill.

These were all set out in that letter and made a part of the record in the Senate debate. The letters were placed in the record by Senator Holland, and Senator Hill also stated it was his understanding of the bill.

I would like to have this understanding in the record before us on this side, that it is also your agreement and understanding of the Department's position, so that it might become a part of the legislative history.

Secretary FLEMMING. That is my understanding, Mr. Congressman; assuming, of course, that the oranges are ripe.

Mr. ROGERS of Florida. Yes. Sound, mature oranges. Certainly.

Secretary FLEMMING. Yes.

Mr. ROGERS of Florida. One more question along that line. In view of the fact that the scientific study of citrus red No. 2 has been completed, and it has been listed under the provisions of Public Law No. 86–2, do you see any reason why the provision could not be made under this bill for its immediate listing thereof?

Secretary FLEMMING. Commissioner Larrick informs me that no more clearance is necessary. It has been cleared.

Mr. ROGERS of Florida. Fine. Thank you very much. One other question. In changing a previous clearance is it necessary for you, before you make a change under your proposal here, to have a hearing, to allow people who may have been given a clearance to come before you or your Department and have a hearing, or can the Department just do it without any hearing whatsoever?

Secretary FLEMMING. You are referring now to the color additives legislation?

Mr. ROGERS of Florida. Yes.

Secretary FLEMMING. And what we would have authority to do under the color additives legislation?

Mr. ROGERS of Florida. Yes.

Secretary FLEMMING. It is my understanding that the bill that is before you would require us to give notice, but not to grant a formal hearing as such.

Mr. ROGERS of Florida. Would there be any objection to provision being written in the legislation which would set forth the requirement

for a hearing where people can come to you and discuss this before action was actually taken? What would be your feeling on that, Mr. Secretary?

Secretary FLEMMING. That would be comparable to the provision in the pesticides amendments and I certainly—as I understand it, those provisions have worked out all right, and I do not see offhand any reason why they would not work out in this case. I would like to have the opportunity of just exploring that with my colleagues.

Mr. ROGERS of Florida. But offhand you see no objection?

Secretary FLEMMING. Offhand I would think a provision comparable to the one in the pesticide field would be appropriate here.

Mr. ROGERS of Florida. Let me ask you this question now. Once the decision has been made under the proposal we are now considering, would there be any judicial review of the decision which the Department made?

Secretary FLEMMING. Yes.

Mr. ROGERS. There would be?

Secretary FLEMMING. Yes. Comparable to the Administrative Procedure Act.

Mr. ROGERS of Florida. Thank you, Mr. Secretary.

The CHAIRMAN. Comparable to what?

Mr. LARRICK. The Administrative Procedure Act.

The CHAIRMAN. Mr. Keith.

Mr. KEITH. Mr. Secretary, I would like to join with my colleagues in tribute to the way in which you have stated your case here for the consumer today, and as the Representative in Congress who is most concerned with the cranberry problem, I would like to recognize particularly the testimony that you gave to the fact that the cranberry industry undertook to police this problem itself. It was nice of you to delineate their effort as well as you did.

However, this is a very serious field in which we are deliberating today, as evidenced by the large number of people who are here. When you are dealing with a small industry, and I was pleased to see Mr. Larrick evidence so much concern about it, we must consider the long-range effects of this proposal.

I would like to say for the record, on behalf of the cranberry industry, that the information which you gave, while in some detail, nevertheless only in part reflects the efforts of the cranberry industry itself to recognize, Mr. Chairman, this most serious problem, even prior to Mr. Flemming taking the action he did. It is very difficult to police an industry with legislation of this sort. One or two, or several individuals can adversely affect an entire industry, large and small, and the consumer can be denied these things.

We have right here in this hearing room today an example, if I might point it out, off the record.

(Discussion off the record.)

Mr. KEITH. This is the same problem they have in the cranberry industry. Some of the growers did not study these directives too attentively. I am glad that this national attention is being given to this problem. Thank you, sir.

Mr. YOUNGER. Will the gentleman yield? As an individual who does not know anything about the cranberry industry, I have never had it cleared up as to why this substance was used originally. What purpose was it used for on cranberries?

Mr. KEITH. It is used for two purposes, if I may answer the question, Mr. Chairman.

The CHAIRMAN. I think the gentleman is very capable of answering the question and should be permitted to proceed.

Mr. KEITH. Thank you. It is used in the medical profession to treat thyroids, to stimulate growth, and to control the thyroid; and it is used to stop the growth of chlorophyll in plants that use that for growing. The cranberry does not need the chlorophyll but the weeds do. So it kills the weeds and does not kill the cranberry vine.

Mr. YOUNGER. That is what it is used for—to kill the weeds growing in the bog?

Mr. KEITH. That is correct.

Mr. YOUNGER. That is all.

The CHAIRMAN. I think the Secretary gave a brief description in his statement this morning about the reasons for it, and so on. Do you want to clear it up any further, or is that clear enough?

Secretary FLEMMING. No. Mr. Chairman, it is my understanding that it proved to be a very effective weed killer and that is why it was used by the cranberry people.

The CHAIRMAN. A labor-saving device?

Secretary FLEMMING. Yes.

The CHAIRMAN. Mr. Roberts.

Mr. ROBERTS. Mr. Secretary, I would like to ask you what methods are used in the inspection of imported foods as far as additives are concerned.

Secretary FLEMMING. I will ask Mr. Larrick to respond to that.

Mr. LARRICK. Our system of inspection of imported foods involves a cooperative arrangement with the collector of customs, whereby the collector of customs makes available to our people lists of all the foodstuffs and drugs and cosmetics which are imported into the United States. Since our facilities will not let us sample any large percentage of those things, we have to spot check, and we try to acquaint ourselves with those products which are most likely to have something wrong with them. Then we advise the collector of customs that we want a sample from that shipment, whereupon he collects the sample for us and it comes to our laboratories and we subject it to the same type and kind of chemical analysis we subject the domestically shipped in interstate commerce foods to.

Mr. ROBERTS. Is there any sort of international arrangement, or agreement, with our countries as to that type of inspection?

Mr. LARRICK. We have on several occasions, on a purely informal basis, sent our technicians abroad to look into various problems. A couple of years ago a Public Health Service scientist teamed up with one of our bacteriologists and they went to Japan to inspect the seafood industry.

We have had people in South Africa on cocoa, and we have sent people to various parts of the world, but in general, Mr. Roberts, our facilities are so limited we cannot make the factory investigations and inspections of food produced abroad that we can and do make in the United States; and to that extent we discriminate necessarily against the American product.

Mr. ROBERTS. The Secretary mentioned in his statement, and I quote at the bottom of page 14:

A symposium on the potential cancer hazards from chemical additives and contaminants to foodstuffs was held in Rome, August 10–15, 1956, under the auspices of the International Union Against Cancer.

Do you feel, Mr. Secretary, that there should be an expansion of authority in this field? You know we are talking about an international health bill. Do you think that this is one field in which we might possibly reach some good results in cooperation with other countries of the world?

Secretary FLEMMING. We do, Mr. Congressman. Definitely. That is one of the reasons why I am very much interested in the basic objectives of the bill which is pending before the committee at the present time.

Mr. ROBERTS. You think perhaps we do not have enough authority under the present laws under which you operate?

Secretary FLEMMING. In any event, I am sure that the passage of that bill would clarify the Department's responsibilities in the area and make it easier for us to work cooperatively in that area.

Mr. ROBERTS. Mr. Chairman, I would like to go along with other members of the committee in commending the Secretary for his very fine statement.

Secretary FLEMMING. Thank you.

Mr. ROBERTS. That is all I have, Mr. Chairman.

The CHAIRMAN. Mr. Williams.

Mr. WILLIAMS. Mr. Secretary, I go along also in commending you on the excellent statement of your position with respect to this problem.

Secretary FLEMMING. Thank you, sir.

Mr. WILLIAMS. With respect to your suggestions as to changing the grandfather clause provisions of the bill, I have one or two questions I would like to ask to clear it up in my own mind.

Secretary FLEMMING. Yes, sir.

Mr. WILLIAMS. As it presently stands those additives which have been in long and continued use and not considered to be harmful, are brought in under the so-called grandfather clause and given the benefit of the doubt with regard to safety.

Secretary FLEMMING. That is correct. And that we would not change.

Mr. WILLIAMS. So that they are given the presumption of safety?

Secretary FLEMMING. That is correct, Mr. Congressman.

Mr. WILLIAMS. Do I understand you correctly in your proposal to suggest that this be changed so as to change that presumption of safety?

Secretary FLEMMING. No, Mr. Congressman. We would not recommend any change so far as the chemical additives are concerned. Our only recommendation relates to the new drug section of our total legal authority.

Mr. WILLIAMS. The new drug would not come under the grandfather clause?

Secretary FLEMMING. Well, it works that way, if I am correct. It worked that way in connection with stilbestrol. Stilbestrol, of course, is a drug, and it is licensed as a food additive, because of the fact that it is added to the feed of cattle. And because it is a food additive if we are to revoke any outstanding approval we must proceed under the new drug section of the act.

Mr. WILLIAMS. What you are saying is this is a new use for an old drug. Is that right?

Secretary FLEMMING. Well, yes. What happened, as you know, as I indicated in my statement this morning, is that there are a series of outstanding approvals for the use of stilbestrol in connection with the feed of cattle. They are outstanding and we came along and made a finding that stilbestrol does induce cancer when included in the diet of animals. That meant that under the Delaney clause of the food additives bill, when some new applications were filed for the use of stilbestrol in the feed of cattle we had to turn them down.

Now as far as the outstanding approvals are concerned, the only way that we can revoke those is to prove their continued use would be unsafe. In other words, the burden shifts back to the Government, and the Government has to assume the burden of proof and demonstrate they are unsafe, whereas in connection with chemical additives, to which you referred as you know, although there is a presumption in favor of their continuing to be approved, if we found that one of those induced cancer when included in the diet of man, in considering a new application we would turn down the new application and immediately cancel out the outstanding approvals.

Mr. WILLIAMS. What you are suggesting is a means by which you can undo that which may have been done either through error or where a new danger in the use of it has been discovered.

Secretary FLEMMING. That is right. I think this, Congressman Williams. It is really just clearing up a technical defect in the food additives amendment, because I feel sure that probably when this was considered, this particular type of situation was not thought of. It has been called very forcibly to our attention, of course, as a result of this stilbestrol case; and, having been called to our attention we thought the right thing to do was to recommend this technical amendment to clear up this particular matter.

Mr. WILLIAMS. Thank you very much. I think that straightens me out.

Secretary FLEMMING. I appreciate your question on it very much.

The CHAIRMAN. Mr. Secretary, I also want to join other members in complimenting you on the presentation you have made here today from the viewpoint that you have submitted on this important matter on behalf of yourself and your Department. I want to compliment you on the very fine way in which you have presented your concern for the health of the people of the country, and particularly with reference to the effect on the American people of heart disease, and the No. 2 killer, cancer.

No one, of course, can take a contrary view as to the importance of programs protecting the health of the people of America, and indeed of the world. This is a most important piece of legislation. It is far reaching. We have arrived at the time when we must recognize that in order to protect the health of people, with many new discoveries being made almost daily—and I heard not long ago that there were several thousand new discoveries every day—we have arrived at that time when such far-reaching authority must be considered. This bill does that.

I do not think anyone could get the idea that the manufactures of the products designed for public consumption are any less interested

in the health of the people than the Government agencies or the Congress, as the case might be. We are again considering a bill that extends enormous authority to a Federal agency. That points up the necessity of having an agency such as yours with qualified men such as you have in your Department, and with the high principles you have tried to attain over the years. You have a lot of fine career men in your organization.

Of course, as you have presented this case today, it reminds all of us of the fact that we are going through a rather short journey in life. We can be hit with something by the time we turn around. I fully realize that our scientists have done a tremendous job. We have made great strides and great progress to improve the health of the people of this country. I fully realize that there are many things that they have not yet found out, as has been indicated here today.

It seems to me a certain trend has gone through your presentation here today, and I think it is quite important that we try to meet a situation even where we do not know precisely what it is.

As you said a moment ago, in trying to answer some questions of members of the committee, you do not know its effect on cancer production even to the extent of only 2 parts to 1 billion, which was the term that was used.

Sometimes I think we also have to be a little careful that we do not go so far as to make everybody think they may or may not have cancer, or worry them to the extent that would bring about a mental condition on the part of that individual. I do not think we ought to carry this thing so far as to raise that scare-word and arouse fright in the minds of people. I hope nobody will receive that indication here. I hope they will fully realize we are trying to meet what we know and what we have found through the effective work of our scientists in the laboratories.

Other than that I am highly impressed with what you are asking for here. It does concern me a great deal to try to tell the American people that there is a condition existing and still we do not know anything about it. We do not know how much of it it takes to produce cancer, but we know some of us are likely to be struck with it any day, just as a lot of people are.

Certainly it presents us with a tremendous opportunity when we deal with legislation of this kind. The recent publicity about cancer is an example of just how this whole thing works. Some of it has not been accepted as it should be in my opinion. For that reason I have been giving this entire problem a great deal of consideration myself, and there are a lot of questions in my mind.

We have been talking in general terms here today about this problem. We have not gotten down to specifics except in the case of cranberries and chickens. No one has said much about lipstick here yet. I suppose most every woman in America uses lipstick. The legislation we have here is going to interest every woman in America from that standpoint.

There has been very little said about the necessity and the desirability of having certain colored oranges, which, as a matter of fact, brought about the temporary law last year.

So it seems to me that if we could obtain from you some information in connection with these other subjects, it might be helpful.

What effect would some of these have?

Secretary FLEMMING. Before addressing myself to that question, Mr. Chairman, I will address myself to your earlier comment relative to the situation that confronts us as far as cancer is concerned.

I certainly share with you the feeling that none of us wants to create any undue or unjustified concern or alarm. And I can assure you that in everything that we do in the Department, we will keep that definitely in mind.

The CHAIRMAN. Thank you.

Secretary FLEMMING. That is why, as a layman in this field, in preparing my testimony for presentation to the committee, I did call upon the outstanding scientists at the National Cancer Institute, as well as the scientists in the Food and Drug Administration, because I can assure you that any statement that I make in this area at any time I want to be a measured statement, a statement that the men for whom I have great respect in the field of cancer research are willing to defend.

You will note that the statement to which you have referred and which I used in referring to one of the other questions; namely, that no one at this time can tell how much or how little of the carcinogens would be required to produce cancer in any human being, or how long it would take the cancer to develop is one of the statements included in the summary of Dr. Mider's study; in fact, you will find that same statement in the study itself.

On the basis of everything that has been presented to me, I am convinced that that is true. And because I am convinced that that is true, I am convinced that the American people should not be put in a position where, unnecessarily, they include in their diet a substance that has been demonstrated will induce cancer when included in the diet of an animal.

The CHAIRMAN. No one could quarrel with that statement. But since you have that substance, you do not know whether it will induce cancer—in your own report it says that no one knows—that is what I am getting at, the authority for that.

Secretary FLEMMING. Mr. Chairman, I am glad that you put it in just that way, because I am not saying that no one knows whether it induces cancer when included in the diet of an animal. We do know that. And once we know that, and once it has been established, then we are simply contending that man should not be subjected to the risk that is involved in including that same substance in his diet.

The reason I keep saying that no one knows how much or how little of that substance would be needed to induce cancer, if included in the diet of man, is that we know that it will induce cancer when included in the diet of animals.

The reason I stress that is that there have been those who are very popular who have asked the question as to whether or not there is a threshold, a tolerance, that could be established, as far as a cancer-producing substance is concerned. And I am told on the basis of research as it stands at the present time, there is no way of establishing or identifying a threshold or establishing a tolerance.

It seems to me that as long as that condition prevails, then the amendment that this committee and the Congress included in the food additives amendment represents sound public policy.

When the time comes that our research reaches the place where that threshold can be identified, where a tolerance can be established that we know will not induce cancer in man, then we will come back and ask the Congress to give us authority to identify the threshold or to establish the tolerance.

I am sure that if we can substantiate that request or support that request with competent scientific evidence, that undoubtedly you would respond affirmatively, just as you have responded affirmatively in giving us authority to set tolerances as far as toxic substances are concerned.

So I would want to stress the fact that we do not suggest that we should bar the use of a substance on cancer grounds unless we know that it will induce cancer when included in the diet of such an animal, but having determined that fact, then we feel that man should not be asked to take the risk that is involved in including it in his diet.

The CHAIRMAN. That is certainly reassuring and more clarifying than what I have obtained heretofore today.

Certainly no one, in my opinion, wants to take any amount of strychnine, because he does not know how much it will take to do the job.

I am in that category myself. It may affect different people in different ways.

I might say this, and I have talked to some of my colleagues about it, that we have in mind when these hearings are concluded that we should get together a panel of outstanding scientists in the country for the purpose of having them make a record and advise the committee about these matters.

I imagine that there will be as much controversy among them as in other subjects. I hope it will result in some information that would be helpful.

Secretary FLEMMING. I think that it would be a fine thing if you did that, and I can assure you that we would be more than happy to cooperate with such a group. In fact, that was one of the reasons why I asked the National Cancer Institute to prepare the kind of a document that Dr. Mider has presented.

It seems to me that a panel of that kind probably would find that document very helpful; certainly as a point at which to begin their discussion.

As I said in my testimony this morning, I have no objection to any number of competent groups being assembled to study this particular problem, but the only thing that I want to underline and emphasize, as I did in my statement, is that as of now, the preponderance of evidence is that it is impossible to identify a threshold or to set a tolerance for a substance that induces cancer when included in the diet of an animal.

As long as the preponderance of scientific evidence is in that particular direction, then I say that the policy incorporated in the Delaney amendment is a sound policy and one that we should follow.

As I indicated, we feel that our general authority makes it possible for us to follow such a policy, but we are very much encouraged when the Congress of the United States, as it did in the food additives bill, said, "We likewise feel that this is sound policy."

Until this policy is changed as a result of the preponderance of evidence, let us say shifting the other way, until it is changed by the

Congress and by the administrative branch, I just want to make it perfectly clear that we intend to proceed on the basis of that policy.

Whenever we establish the fact that a substance induces cancer when included in the diet of an animal, we are going to bar its use as far as it being included in the diet of man is concerned; that is, we are going to do everything we can under our existing law to achieve that objective.

But I agree with you: I think it is a matter that should be subjected to constant study. There are those who regret the fact—let me put it that way—that you cannot set a tolerance, a threshold. There is not any doubt in my mind, as the result of the $80 million or $90 million that our Cancer Institute alone is spending in cancer research, plus all of the money that is being spent by other groups throughout the country, that the time will come when we can identify that threshold and set that tolerance. And I am sure that we will all be happier when that time comes. My only point is that it has not come yet.

I think, therefore, that this committee and the Congress did the right thing in the passing of the Delaney amendment.

The CHAIRMAN. We had a little trouble getting the Delaney clause accepted. Of course, thanks to Mr. Delaney, who presented the problem, we did.

Frankly, I respect your position. What you intend to do in administering this law is commendable. As a matter of fact, our committee is concerned and interested in the administration of the laws that come under the jurisdiction of this committee.

Secretary FLEMMING. Right.

The CHAIRMAN. We do think that such a panel that I have just referred to a moment ago might very well develop a record that would be helpful to you, as you continue your work. Before we get too far away, how about the lipstick colors?

Secretary FLEMMING. The Food and Drug Administration color retesting program has shown so far that seven of the colors used principally in lipstick cause definite injury to laboratory animals when fed in amounts up to 2 percent of the diet. None of the colors have produced cancer in the test animals, however.

It is inevitable, of course, that a certain amount of lipstick is ingested. Only colors suitable for use in foods or in drugs for internal use are permitted in lipstick; 10 other lipstick colors are closely related in their chemical structure to the 7 colors tested, and hence these test results are applicable.

On April 15, the Food and Drug Administration published in the Federal Register a proposal to discontinue certification of the 17 colors; 30 days were allowed for comment.

After comments on the proposal had been received and evaluated, the Food and Drug Administration published on October 6 of last year a final order removing these 17 colors from the list of certifiable colors. This order was to have become effective on January 6 of this year.

Objections to the final order were filed, however, and a hearing was requested. The effective date of the order was postponed, once to January 25 and now to February 1, to allow the Department sufficient time to study the objections and to determine whether or not a hearing must be granted.

I might say that that particular question has been presented to me. I asked for a memorandum on it from the representatives of the industry. They have filed it with me. I am asking the Food and Drug Administration to comment on it, and we will make a determination on that particular point.

I think this is a good illustration of why we think it would be a good thing to have a color additive bill, because here is a situation where if any of these colors are found to be harmful when ingested, or used in large quantities, we have no choice but to prohibit their use in any quantity whatever.

I am confident of the fact that if this bill which is now pending before the committee were law, that undoubtedly we would be able to establish tolerances for some of the colors that are involved in this lipstick situation. I do not know how many or anything of that kind, but that is up to the Food and Drug Administration. But I am confident that if we were given the opportunity of exercising discretion in this case, that it would result in colors that are now proposed for the ban being approved for use in concentrations that will guarantee their safety.

That is a good illustration of why we need discretion.

Again, may I underline the fact that there is no question of cancer involved in any of these colors. I mean, none of them have been shown to induce cancer in animals when ingested by an animal, so that issue is not present. But they have shown in quite large quantities to create something. Therefore, under the existing law, we have no alternative but to abandon them.

Really what we are doing in asking for this color additive amendment is asking for discretion to study those situations, and if we determine that a color in a small quantity would not be harmful at all, would be harmless, that we be given the right to act on that determination and permit its use within a given tolerance.

The CHAIRMAN. You feel that you would be better able to serve the women of the country with this bill?

Secretary FLEMMING. I am sure of that.

Mr. AVERY. Could I ask a clarifying question?

The CHAIRMAN. Yes.

Mr. AVERY. As to the 17 colors, under the administrative procedure, are they banned or suspended?

Secretary FLEMMING. It is perfectly proper to use them until this order—until and unless this order is made final.

Mr. AVERY. Thank you.

The CHAIRMAN. Does the same thing apply to the color that is used on oranges? I see our former colleague, our old friend Pete Peterson here.

Secretary FLEMMING. If I may, I will ask Commissioner Larrick to comment on the question of oranges.

Mr. LARRICK. You will recall that some years ago we reached a decision that a color known at red 32 could no longer be certified, because it was not harmless. And we did decertify that color.

Mr. Peterson and his colleagues came forward and persuaded the committee and the Congress to enact legislation to give them a period of time within which they could do the research necessary to develop a safer color, and they were given, as I recall, 3 years, at the expiration of which, No. 32 would go off the market.

During that period of time they, in collaboration with some of their friends in industry, did develop such a color. They did submit it to the Food and Drug Administration, that is, evidence of its safety. And the complete evidence revealed that as used the new color is completely harmless.

So this committee then passed a law that let them use that new color until legislation is passed dealing with the entire color question, or until the end of this Congress, as I recall the time limit, but because the evidence that they submitted to us was so comprehensive, if the color bill goes through, I am advised by my colleagues that it would not be necessary for them to take any more scientific steps to be able to continue to use that color safely on oranges.

The CHAIRMAN. In other words, you think that this legislation is sufficient to clear up the problem which developed about a year or more ago?

Mr. LARRICK. Exactly.

The CHAIRMAN. Would the same thing be true as to the coloring that we put into ice cream?

Mr. LARRICK. Each one of those will be a separate problem. Some of them have not had enough pharmacological work done to let us say one way or the other whether we can establish a safe tolerance.

But in the color bill, you have made a provision—a provision has been proposed—that if there is no evidence that the color is hurtful, and the person who is interested starts forth to do the necessary scientific work to show whether or not it is safe, and if they keep us advised currently of all of the developments that come out of that study, that they get 2½ years within which to complete the study. And if that has not solved it, but there is still no evidence of harm, they may be granted additional time.

So there is ample provision in this statute, in my judgment, to permit the continued use of colors where there is no suggestion of harm, but where the testing with the modern laboratory testing techniques of today have not been done.

The CHAIRMAN. The same principle would apply to cakes and other food items, I guess?

Mr. LARRICK. Yes, sir.

The CHAIRMAN. Where they are used?

Mr. LARRICK. That is right.

The CHAIRMAN. We could go on and on. I do not want to use too much time here.

There are two other things that I want to inquire about.

First I will go back to where Mr. Kilgore left off.

We were talking about stilbestrol.

In the first place, I recognize the interest we have in my district in that substance, because we raise poultry. Naturally that would also be true of Mr. Kilgore, who comes from Texas, and is interested in beef cattle and sheep.

We have a pretty big poultry industry in our State. As I understand it, stilbestrol is permitted to be used in the feed so far as cattle and sheep are concerned, is that right?

Secretary FLEMMING. That is correct, because we do not believe when they use it in accordance with instructions they find any residue of stilbestrol in the meat.

The CHAIRMAN. That is, if the feeding of this chemical is stopped 48 hours before they slaughter the animal, is that right?

Secretary FLEMMING. That is correct. They must stop feeding stilbestrol 48 hours before slaughter.

The CHAIRMAN. Well, now, why could we not use the same policy with regard to capons?

Secretary FLEMMING. Because, as I understand it, it has not been possible to devise any kind of instructions which would create a situation where there would be no residue left in the poultry.

The CHAIRMAN. As to chickens?

Secretary FLEMMING. You just cannot escape a residue appearing in the poultry. That is the difficulty.

The CHAIRMAN. In other words, even if you stop the use stilbestrol, say 48 hours before the slaughtering of the chickens, the same thing would not apply to the chickens as applies to beef and sheep?

Secretary FLEMMING. As I understand it, you do not feed it, so far as the chickens are concerned—you do not put it in the feed. It is injected. Up to the present time, they have not been able to develop any method for injection which results in no residue.

Commissioner Larrick reminds me of the fact that work is being done along that particular line in an effort to achieve that objective. Of course, if the objective is achieved, why we can look at the matter in a different way than we are able to look at it now.

The CHAIRMAN. You worked it out with sheep so that you put a pellet in the ear, you said?

Secretary FLEMMING. Yes.

The CHAIRMAN. If you put it in the chicken's head, could you not devise some way of taking it out of the chicken's head, just as you take it out of the sheep's ear—I am talking about something, I realize, that I do not understand anything about. [Laughter.]

Secretary FLEMMING. It is the other way, as I understand it.

They do, but it is still there. It is still there up to the present time.

The CHAIRMAN. I just wanted to protest on behalf of the chicken people as to what seems to me to be preferential treatment that you are giving the sheep people. [Laughter.]

Seriously, it is a problem. I am not one of those who objects to what was done, because I do recognize the consideration which goes to safeguard the health of the people, but I think that some concern is justified, so far as the poultry people are concerned.

Your action, particularly in the cranberry field, was something that just had to be timed that way.

I do have a feeling that you did not have such consideration in the timing for the chicken people. As a mater of fact, it left 1 percent of the poultry industry affected by it—lest less than that. But somehow or other the people of the country got the impression from your news report that the poultry industry was affected by it, and the immediate result in our part of the country was that the price of chickens to the producers went down 2 to 3 cents overnight.

They were right on the verge of not being able to continue. It certainly did put the industry in a terrific overnight squeeze. You recognize that. This morning you did make a clarification on another matter to meet that. I have heard that probably you and the poultry people have been getting along pretty well in the last few

weeks. I hope that report is true, and that the American people will also find out that there is very, very little poultry in the United States affected by this method of feeding.

Secretary FLEMMING. Mr. Chairman, may I say in connection with the stilbestrol situation that as far as poultry is concerned, we did, in our very first statement, make it very clear that the action was directed only against 1 percent of the total number of poultry on the market, and we also made it clear that we had worked out an arrangement with the manufacturers of stilbestrol with the poultry industry and with the retailer which was of such a nature that I could assure the consumer that he could purchase poultry without any concern whatever.

This was included in our very first statement.

After a lapse of about a week, using the field officers of the Food and Drug Administration, they checked to see whether or not this had actually taken place, namely that they had been taken off the market. And when we received the information that they had been taken off the market, as a result I put out another statement saying again that I can assure the consumer that he can go to the store and purchase poultry without having any concern whatever.

The CHAIRMAN. Of course, it was very good to have that assurance, but the effect of it, however, did not overcome the American people's anxiety about poultry.

Was it true that the representatives of the poultry industry met with you a day or two beforehand and endeavored to prevail upon you not to make such a public announcement, giving assurances that all affected poultry would be withdrawn, and that they had done so?

Secretary FLEMMING. It is true that we met with the manufacturers of stilbestrol who had received approval for its use in connection with poultry. We met with representatives of the poultry industry, and we met with representatives of the retail outlets.

We met for 2 days considering this matter. It is certainly a fair statement to say that the representatives of the poultry industry urged us not to put out a statement, because as you indicate, it affected only 1 percent of the total number of birds on the market, and also because they felt that the whole situation would be cleared up automatically within a period of 3 or 4 weeks.

We were fortunate, however, in being able to announce at the same time that we announced this action that the Department of Agriculture had agreed to buy up the birds, the 1 percent that were affected by our order which, of course, eased the burden as far as the poultry producers were concerned.

The CHAIRMAN. I have heard about that a great deal, too. Probably Secretary Benson will be given an opportunity to explain what he is going to do with them.

Secretary FLEMMING. I have not gotten into that, Mr. Chairman. This is the responsibility of the Department of Agriculture.

There is one thing that we want to stress, as we have stressed it in our announcement, that if they get rid of the skin, the kidneys and the livers, that there is no danger involved at all, even so far as those birds are concerned. We stressed that in our various announcements that we have made.

The CHAIRMAN. I think that was mentioned a little while ago by someone. I understood Mr. Larrick to say that if they were skinned it would not necessarily relieve the residue.

Mr. LARRICK. Mr. Harris, I announced that if they would skin the bird, take out the kidneys, take out the livers, there would be no question about the quality of the red meat or the white meat. That was made, that statement, particularly with respect to the housewife who had these capons in their freezers.

Secretary FLEMMING. Mr. Chairman, if I might, I would just like to quote briefly from my statement that I released on December 10.

I said:

On the basis of the facts with respect to residues of stilbestrol in poultry, we have taken the following steps—

and those steps are known to you, of course.

Then I concluded with this statement:

On the basis of the above statement—

and that statement was one made by Dr. Hertz, to whom I referred in my statement this morning—

and on the basis of the voluntary actions taken by the drug industry and being taken by the poultry industry and the retail food industry, consumers can buy poultry with full confidence that it is safe and wholesome.

That was the thing, the theme that we underlined right from the beginning.

The CHAIRMAN. I think we might pursue the bill a little bit further.

Secretary FLEMMING. Just before you do that, could I clear up one matter on the bill, growing out of some earlier questions? Those questions related to the matter of a hearing and what our position was on a hearing.

The bill as pending before this committee does provide hearings on all findings except the provisional listing to which Congressman Williams referred at one point, and I think possibly Congressman Kilgore.

Of course, we are in complete agreement with the hearing provisions in the bill.

So far as revoking the provisional listing is concerned, we certainly would not object to including in the bill a provision for a hearing in those cases, but we do think that the suspension of the approval should be immediate with the hearing to follow where requested in those cases. That is now only in relation to the provisional listing.

So far as all other aspects of the proceedings under the bill are concerned here, we certainly concur in them.

The CHAIRMAN. Are there hearings provided for in the bill as introduced here?

Secretary FLEMMING. Yes. On page 13, beginning with line 1 of the House bill, primarily by reference to other provisions of the basic act, but my understanding is that the result of that language is that it provides for hearings on all findings except the provisional listings. As I say, we would not object to making a provision for hearings there, but we do think that if that were done, that probably there should be a provision for the immediate suspension with the hearing to follow.

The CHAIRMAN. And then the usual provision for review?

Secretary FLEMMING. That is correct.

You will notice that this included judicial review of the Secretary's action in such proceedings.

The CHAIRMAN. Otherwise these two bills, the House and Senate bills, are identical, with the exception of page 10 in the House bill, which has reference to the Delaney amendment—is that identical with the amendment in the food additive law, except in that respect?

Secretary FLEMMING. It is not identical because of the colors that are applied to external parts.

The CHAIRMAN. Except as to the colors?

Secretary FLEMMING. That is right—except for the changes that have to be made in order to adapt it to the color situation—except for that, it is identical, so far as the policy issue is concerned.

The CHAIRMAN. In other words, it gives the identical authority, insofar as the color additive is concerned, as before?

Secretary FLEMMING. That is correct. There are two or three other technical changes that were made in the Senate bill. I will be glad to file for the record at this point a memorandum identifying those. They are not material to the substance, however.

The CHAIRMAN. You filed a letter dated August 7, 1959.

Secretary FLEMMING. We filed a letter.

Mr. LARRICK. Yes.

Secretary FLEMMING. It is my understanding that that letter of August 7, 1959, does call attention to the technical changes made by the Senate.

The CHAIRMAN. Are the provisions which you discussed in your letter in the Senate bill on page 9?

Secretary FLEMMING. That is correct; pages 9 and 10. I have a Senate print here. I do not know whether you have that or not.

The CHAIRMAN. Yes, I have one here in front of me. You take the position that this is a technical change and does not affect the policy involved in the bill, is that correct?

Secretary FLEMMING. That is correct.

The CHAIRMAN. And that you are willing to accept the change?

Secretary FLEMMING. That is correct.

The CHAIRMAN. You feel that it would not take any authority away from the Food and Drug Administration?

Secretary FLEMMING. That is correct.

The CHAIRMAN. Mr. Derounian.

Mr. DEROUNIAN. Mr. Flemming, I would like to ask you a couple of questions on the safety of stilbestrol when taken clinically by humans. The reason I ask that is because my wife, in several of her pregnancies, took quite a bit of this drug and I am wondering whether or not there is any possibility of cancer when taken in such large quantities orally.

Secretary FLEMMING. In that connection, I would like to call attention to a statement that I quoted from a statement prepared by Dr. Roy Hertz, who is Chief of the Endocrinology Branch of the National Cancer Institute. In my testimony, this morning, I said this:

> At this time I would like to call attention to the remainder of the statement by Dr. Roy Hertz, part of which I quoted, about:
>
> "The early removal of hormone treated poultry from the market will effectively eliminate the continued exposure of the consumer to this potential hazard.
>
> "It is important to bear in mind that the use of stilbestrol for agricultural

purposes has no bearing whatsoever on the use of this drug in the practice of medicine. Medical use of stilbestrol was first authorized in 1941. The drug can only be sold on a physician's prescription, and therefore is administered only under medical supervision.

"It is generally agreed among physicians that drugs of this type are quite useful in the control of the symptoms of many patients without significant hazard under the usual conditions of clinical practice."

In other words, this question is raised quite often in connection with some of the issues that confront us—I mean, the basic issue that you raise.

Of course, we all recognize that it is one thing to have a doctor prescribe something for a patient after he becomes thoroughly familiar with the condition of the patient. It is another thing to have the entire population absorb a substance indiscriminately.

Mr. DEROUNIAN. Cancer in one patient is even dangerous. Nowhere in that statement does it there say there is no hazard of cancer by a patient taking it orally. It says, "no significant hazard."

Going back to your own test on color, if color produces one trace of cancer in animals, you are going to ban it, are you not?

Secretary FLEMMING. That is correct.

Mr. DEROUNIAN. And rightly so. Why not stilbestrol?

Secretary FLEMMING. I would like to ask Dr. Mider, who is here with me, to comment on that question.

Dr. MIDER. I cannot claim the competence that Dr. Hertz has in this field of endocrinology. However, there are many drugs which we use in clinical medicine which are poisonous and we always weigh the benefit to be gained against the risk involved.

There are physicians who have reported cases in which they have associated the cancers that occurred in patients receiving stilbestrol with the administration of stilbestrol. It is sort of a post hoc ergo propter hoc argument. The number of cases is small in relation to the total number of patients that have received stilbestrol.

Mr. DEROUNIAN. I just wanted to bring up the point.

Secretary FLEMMING. I do not know whether you were here or not when I identified Dr. Mider. Dr. Mider is the Associate Director for Intramural Research for the National Cancer Institute. He prepared the basic document that I presented this morning, and also the summary of that document which I presented in my testimony.

Mr. DEROUNIAN. I understand that. Thank you.

Mr. AVERY. Mr. Chairman, my question is not addressed to the Secretary, but I want to ask it before he leaves, because of the confusion that will be in the room. And it is this: Whenever we discuss matters of public health, we usually have a room full of people like we have today. We have industry people, we have legislative witnesses; and, of course, the people from the press. That is good.

I am curious to know if the consumer, John Q. Public, is very well represented in a matter of this kind, so I wonder if I can impose upon the committee briefly for everybody to hold up their hands not representing anybody except the consumer group. I notice that there are 5 hands; Mr. Chairman, would you estimate that we had about 100 people here in the room?

Mr. LARRICK. I might say that we represent the consumer. [Laughter.]

Mr. AVERY. Of course, Mr. Larrick, and you would naturally expect us to respond that we think we represent the consumer. I was

curious to know just how much the consumer is represented in person here in the audience.

Secretary FLEMMING. Thank you.

Mr. AVERY. Thank you.

The CHAIRMAN. Mr. Secretary, let me on behalf of the committee thank you for your appearance here today and your willingness to answer all questions and to present very ably your reasons why this legislation should be approved in the interests of the health of the country.

It may well be that during the course of the hearings and the consideration of it, we will have questions that will arise. I am sure that you and Mr. Larrick and Dr. Mider and others of your staff would not mind if we found it necessary to ask you to come back and meet with us further, in order to give us the benefit of your views on this subject.

Secretary FLEMMING. I will be very happy to do it at any time that the committee would like to have me do it. I do regard this as very important legislation.

I want to do everything I can to be of help to the committee in its consideration of the legislation.

The CHAIRMAN. Thank you. We try to represent the public and the consumers of the country in connection with this matter. We want to thank you for your helpfulness in making the record.

You have a big job. You have one of the biggest jobs in our Government, and I know that you have a large staff, and you have to have a good, capable staff.

The right thing has to be done, because to meet a problem of this kind, mistakes cannot be made.

Secretary FLEMMING. That is right.

The CHAIRMAN. That is the way I view it. For that reason, I want to get as much information as I can. You have been very helpful today in this hearing. I am sure that as we go along, you will be very helpful to us and to yourself in your administration of the law.

And so with that, thank you again for your time here today.

Secretary FLEMMING. I am very, very happy to have had this opportunity, Mr. Chairman.

There is just one more thing. Congressman Younger asked for certain information on the number of applications filed in connection with the packaging. I do have some figures here, but I think probably it would be best if I could submit that later.

The CHAIRMAN. Submit them for the record.

Secretary FLEMMING. I think it would be best if I could file this for the record tomorrow.

The CHAIRMAN. That will be perfectly all right.

Secretary FLEMMING. And in that way prepare a better report.

(The information to be furnished follows:)

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
FOOD AND DRUG ADMINISTRATION,
January 27, 1960.

(A) Formal petitions submitted under the food additives amendment to the Federal Food, Drug, and Cosmetic Act with respect to packaging ingredients:

(1) Petitions submitted: 27.

(2) Petitions which related to substances that are not food additives (firms so advised): two.

(3) Petitions not filed because they were incomplete (firms so advised): 10.

(4) Petitions filed or in process of being filed: 15.

The pending petitions (item 4 above) are being handled within the time limits established within the food additives amendment; i.e., 90 days plus an additional 90 days where extension of time is necessary.

Three of the petitions have been pending since October 1959 (two of these were submitted earlier but because of deficiencies had to be supplemented and thus have only been pending since they were completed and filed).

Three petitions have been pending since December 1959.

Nine petitions have been pending since January 1960.

The 27 petitions referred to above were submitted by 23 firms.

(B) The Food and Drug Administration has received, since the food additives amendment was enacted, 1,149 letters from 530 firms inquiring about the status of packaging materials.

Answers have issued on 994 letters indicating:

(1) That the evidence available shows the product not to be a food additive (approximately 25 percent of the firms), or

(2) That the evidence shows that the proposed use of the product will require the filing of a food additives petition (approximately 20 percent of the firms), or

(3) That the evidence before the administration is not sufficient to permit a decision and the inquirer will need to present further data (approximately 55 percent of the firms).

The 155 letters that are pending have been submitted by 128 firms. Three were received in October 1959, 19 in November 1959, 50 in December 1959, and 83 in January 1960.

The CHAIRMAN. Since this subject is so important to the health of the people, is there any question involved with respect to cigarettes, filters, and so forth, that comes into this problem at all, such as the color, and other things?

Secretary FLEMMING. We do not have any authority over cigarettes. We are not asking for any authority in this legislation. The responsibility in that area, of course, rests with the U.S. Public Health Service.

As you know, they have followed the practice, for which I commend them, of assembling the evidence on this issue, both pro and con, and then evaluating that evidence after they have assembled it.

Then the Surgeon General issues a statement.

The Surgeon General prepared an article for inclusion in the Journal of the American Medical Association some weeks ago, and that, of course, was called to the attention of the public. I feel that the Public Health Service has rendered a very fine service in consistently keeping in touch with research in that area, with the studies in that area, and then from time to time bringing the results of all of the studies, both pro and con, together and then giving the country the benefit of their own evaluation.

The CHAIRMAN. Mr. Secretary, I want to thank you very much.

Secretary FLEMMING. Thank you, sir.

The CHAIRMAN. The committee will stand adjourned until 10 in the morning.

(Whereupon, at 3:55 p.m., the committee adjourned, to reconvene at 10 a.m., Wednesday, January 27, 1960.)

COLOR ADDITIVES

WEDNESDAY, JANUARY 27, 1960

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The committee met, pursuant to recess, at 10 a.m., in room 1334, New House Office Building, Hon. Oren Harris (chairman of the committee) presiding.

Present: Representatives Harris (presiding), Williams, Roberts, Rhodes, O'Brien, Rogers of Florida, Brock, Glenn, Keith, and Curtin.

The CHAIRMAN. The committee will come to order.

Our first witness this morning will be our esteemed colleague, the Honorable James J. Delaney, a Representative from the Seventh Congressional District in the State of New York.

We will be glad to have your presentation on this very important subject. I might say that it is well known that you, as one of the able Members of the Congress, had much to do with this legislation. The work which your select committee performed during the 82d Congress was the basis for the Food Additives Amendment of 1958 to the Federal Food, Drug, and Cosmetic Act and likewise forms a basis for the color additive legislation now before us for consideration. So it is a long history that you have had in connection with these problems.

We will be glad to hear from you now.

STATEMENT OF HON. JAMES J. DELANEY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Mr. DELANEY. Thank you, Mr. Chairman and members of the committee. It is a pleasure to be here this morning. After the long and comprehensive testimony that we heard all day yesterday from Secretary Flemming, anything that I might add on this proposition would be merely repetitious.

This kind of testimony must be backed up by scientific evidence. Secretary Flemming presented a wealth of such evidence for every statement that he made yesterday.

I am glad that there is no dispute between the Senate bill and the House bill, insofar as pretesting of colors is concerned.

In the early days, after the close of the original investigation of the use of chemicals in foods and cosmetics, pretesting was what we desired most; to shift the burden from the Government to those who would sponsor new and insufficiently tested chemicals. I am happy to say that is now generally accepted.

I want it to be understood that Secretary Flemming supported the House bill in every respect.

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May I say this, Mr. Chairman, in answer to one of the questions relative to the word "cancer" in the cancer clause that was brought up here yesterday: For several years after the committee had concluded its hearings in 1950, 1951, and 1952, there was no cancer clause in the food additive bill. However, evidence of the need for such a clause was brought to my attention from time to time, and after the cancer symposium of the International Union Against Cancer in Rome in 1956, it was again brought to my attention. Thereafter, I believe it was in 1957, after numerous consultations with cancer experts, the carcinogen amendment was first introduced into the bill. So it was not originally planned that way. It was one of those developments that took place because of scientific information that was given me some years after the conclusion of the investigation and the original recommendations of the committee.

I can say that in this matter of color additives there is every reason why we should have a strong bill. Some food additives serve a useful purpose. They have helped to develop and improve our food supply in many ways.

However, color additives provide no nutrient value. They have no value at all, except so-called eye appeal. We should be particularly careful with them, therefore. They add nothing in any other way.

I can see no reason why this bill, with the carcinogen clause, should not be passed immediately.

I had a prepared statement, but it was merely repetitious of what Secrtary Flemming said yesterday, and I do not want to take this committee's time to repeat it. I support the Harris bill as it is written, and I hope that we will pass it very speedily.

The CHAIRMAN. Thank you very much.

Mr. Glenn, do you have any questions?

Mr. GLENN. I wish to compliment you on that amendment, in the original legislation, because I think it was of great service to the public.

I am sure that we are all against cancer like we are against sin.

I am sure that we appreciate your coming in and being here today.

Mr. DELANEY. Thank you.

The CHAIRMAN. Mr. Curtin.

Mr. CURTIN. I wish, also, to congratulate you on your long and successful fight in this field.

Mr. DELANEY. It was not done alone. Mr. Harris took the lead, together with Mr. Williams in the last Congress. And many other colleagues, like Mrs. Sullivan, joined with us in it.

I am happy to see that we are continuing to have their support, people who are willing to study this important problem.

As you suggested yesterday, we have not scratched the surface on this. It is a job that is not for Congressmen alone. It should be for the scientific groups to apply their full time to it. What we should do is take a composite thinking and attempt to put it into legislation for the protection of the American public.

Mr. CURTIN. I agree with you. I think that we all agree with you on that.

The CHAIRMAN. Thank you very much. We are very glad not only to have had you here with us as a witness, but to have your continuing interest in this important subject, and we should like to have you with us during the balance of the hearings.

Mr. DELANEY. Thank you.

The CHAIRMAN. We are also glad to welcome our distinguished colleague, Mrs. Leonor Sullivan. We appreciate your interest in this proposed legislation. Certainly, you are most welcome before this committee. Those of us who were here during the time that your husband was a member of the committee well remember his great ability and accomplishments and his warm friendship.

STATEMENT OF HON. LEONOR KRETZER SULLIVAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MISSOURI

Mrs. SULLIVAN. Thank you, Mr. Chairman and members of the committee.

The tremendous turnout you had here yesterday morning when Secretary of Health, Education, and Welfare Arthur S. Flemming testified on the color additives issue indicated clearly the widespread interest in the subject matter of these hearings. I doubt if you ever tried to squeeze more spectators into your hearing room. Obviously, this legislation is serious to many groups in our society—to the food and chemical and cosmetics industries, and to the general public—particularly the housewife.

My purpose in appearing before you this morning is to urge you to please take your time on this legislation. I am not going to suggest that you sit on the bills and do nothing about them, but I sincerely urge that you make haste slowly—that you study this matter as carefully as any issue ever to come before the committee, for you are dealing with the health of the American people in the most direct manner possible.

CIRCUMSTANCES OF SENATE ACTION

I make such a point of urging caution because I know you are under strong pressures to act quickly on color additives legislation. We all know that late in the session last year, without any hearings at all and under procedures which seemed to indicate it was a very minor and routine bill, the Senate, by unanimous voice vote, passed a most far-reaching bill on color additives. We know it is a defective bill in a most serious respect. Yet it came out of committee, as I said, without hearings, and was called up under a routine call of the calendar for passage by unanimous consent, with no full explanation and with virtually no debate or even discussion.

The only thing we find in the Congressional Record of the debate which occurred was a colloquy over the effects of S. 2197 on the right of Florida citrus growers to use a not-quite-harmless coal tar color in coloring Florida oranges. When the Senator from Florida was assured that S. 2197 would not interfere with the use of citrus red No. 2 on Florida oranges, the bill passed automatically.

Some of the members of the committee will recall that, immediately after the Senate acted on this matter last August, I contacted them to urge that there be no such precipitate action in the House. I appreciate the fact that no attempt was made to jam through a bill in the frantic closing hours of the last session. I appreciate the fact that full hearings are now scheduled into the color additives issue.

DELANEY ANTICANCER CLAUSE A MINIMUM REQUIREMENT

I don't want my testimony to imply anything improper on the part of anyone in the Senate; I just think that in the closing rush of last August this bill could not possibly have received the close attention it deserved. Nevertheless, the circumstances of the Senate's action were such that I find it very hard to feel right about this legislation, even if we close up its more glaring loophole by inserting the same kind of anticancer provision which Congressman Delaney wrote into the food additives bill in 1958.

I cannot understand why the bill as it came from the Senate did not include such a clause. Without it, I think this legislation would be far worse than present law covering the use of coal-tar colors.

Furthermore, by taking out from under the Food Additives Act of 1958 dyes made from other than coal-tar bases, it would increase the danger of carcinogens in our diets, unless, of course, the provisions of the Delaney amendment are written into this bill as a minimum requirement.

Obviously, then, despite its impressive title as a bill to "protect the public health," S. 2197 as it passed the Senate would weaken the protections of the Food, Drug, and Cosmetic Act. And this is certainly no time in our history to be weakening the consumer protections of our laws.

On the contrary, our laws to protect the consumer need strengthening, and this is particularly true of the Food, Drug, and Cosmetic Act. We have put a number of patches on it in recent years, but it is far from being as strong as it should be.

HOW WOULD CONSUMERS BENEFIT?

Clearly, some of the shortcomings of the present act do exist in this area of coal-tar colors. But I am not convinced the deficiencies are as serious to the consumer as they seem to be to many of the industries affected.

The present law says in effect that no coal-tar color can be used in or on food or cosmetics unless it is deemed harmless. This law grew out of the conviction of scientists that coal-tar colors are inherently risky and should be circumscribed in use to such an extent that if there is any question at all about their safety they should not be used in or on food, or in other substances which may be ingested.

In recent years, new testing methods have shown that some of the coal-tar colors previously thought to be harmless are not in fact completely harmless, although they may be, and probably are, safe in the manner normally used in commercial products.

Nevertheless, because these colors cannot pass the test any longer of being harmless under all circumstances, the law states they cannot be used, they must be withdrawn. As a result some of the yellows used in coloring margarine and butter, some of the reds—most of the reds, I believe—in lipsticks, and various other familiar colors used in foodstuffs are in the process of being delisted, of being prohibited for use on products which people eat (or, in the case of lipstick, swallow).

Mr. Chairman, I am not quite sure I see how the consumer is being damaged by the removal of these colors. Nor do I see why the con-

sumer would benefit from the changes suggested in this legislation. I can readily see why many industries want legislation enacted which would set up entirely new criteria for approving the use of coloring matter, including the setting of tolerances for the use in or on food of apparently harmless quantities of dyes which may not be harmless in greater quantities. But I do not yet see how the consumer interest would benefit from this color additives legislation.

CAN WE BE CERTAIN THAT "SAFE" LEVELS ARE REALLY SAFE?

True, the proposed legislation would place on the manufacturer, not the Government, the burden of proof for establishing the safe levels of coal tar colors. But as our whole experience with the coal tar colors shows, today's proof of safety may be inadequate in terms of tomorrow's testing methods.

Do we then go to the consumer and say, "Sorry, we made a slight mistake; a coal tar color we knew was not completely harmless but which we thought was safe to use in certain concentrations has now turned out to be unsafe and dangerous, and if you've been eating it in your food we're very sorry about it"?

Mr. Chairman, just how important is it to have these artificial colors in foodstuffs if there is any danger whatsoever to the consumer through their use? True, the margarine manufacturers want their product to look like butter; the butter producers want their butter to look like yellow butter regardless of its natural color; the Florida citrus growers want their greenish-looking oranges to be orange in color, and the manufacturers of all sorts of products—sausage casings, cakes, cookies, pies, bread, processed cheese, spreads, canned and frozen vegetables, confectionery, ice cream, gelatin desserts, puddings, and so on—all want to dazzle us with the looks of their products even if they have to create the look artificially with coal tar colors which at present cannot any longer pass the test of being harmless.

Now we are told that the consumer wants and demands these attractively colored foods and therefore it is an economic necessity for the industry to provide them.

CONSUMERS ASSUME DYES ARE SAFE

I do not doubt that a housewife buying oranges will generally select the product which looks more natural by reason of having been dyed to look that way rather than the greenish one next to it which appears to be unripe; I do not doubt that in selecting a lipstick she will want the color which, to her, best matches her complexion and outfit; I do not argue that in buying processed foods, she is attracted by the appearance of the product.

But the point is that the consumer, in buying these brightly colored or natural-looking colored items in the store, believes—takes it for granted—that the coloring dyes used are safe, and that otherwise their use would not be permitted by the Federal Government.

What this proposed legislation would do is to say that coloring matter frequently used may not be entirely safe under all circumstances but we believe and trust and hope and have reason to think it is safe in the amount used and in the manner used. And so the housewife will then continue to be able to buy margarine which looks like

butter, and butter which, because of a deeper yellow shade, looks more like butter, and so on, even if the looks are artificially contrived through use of not-quite-harmless dyes.

Under S. 2197 as it passed the Senate, these dyes could even be cancer inducing, yet could be used if the manufacturer could establish that the cancer manifested itself only at substantially higher levels of concentration.

CANCER INDUCTION IS CUMULATIVE PROCESS

This, of course, does not jibe with the findings of outstanding cancer experts that cancer induction is a cumulative process which begins with the first dose of the cancer-inducing agent. Secretary Flemming referred to this matter at some length in his prepared testimony yesterday and in a technical report he also submitted, so I need not go into it in any detail.

Many of you—perhaps all of you—saw the letter I obtained on this matter last year from Dr. Harold F. Blum of the National Cancer Institute and which I placed in the Congressional Record of August 27 at pages A7482–A7483 in direct reference to the bill which had just passed the Senate and which is now before you. But in view of Secretary Flemming's technical report from the NIH, I think we can now take for granted the fact that carcinogens must not be allowed in food or in anything ingested. Present law already prohibits this as far as all food colors are concerned—the coal tar colors under the basic Food and Drug Act of 1938, and the other colors under the Food Additives Act of 1958.

So, again, I ask, How does this legislation help the food consumer?

We are told that the job of analyzing and retesting all of the coal tar colors already in use or authorized for use to see if they are still harmless would take the Food and Drug Administration at present levels of operations at least 20 years. This legislation would throw that burden onto the manufacturers and they would have to complete the task in 2½ years. Frankly, I think what would happen is that at the end of the 2½ years we would either be flooded with anguished demands for an extension of time, or many of the dyes would then go off the market because the cost of proving their safety was too high.

I, for one, would be willing to give the Food and Drug Administration the funds to do this testing itself—under the present law.

BROADEN SCOPE OF HEARINGS

I realize, Mr. Chairman, that I am not helping the committee very much if all I do in testifying here is to say "take it easy." I know you have a problem to contend with and many pressures upon the committee to act quickly. Therefore, I think it would be constructive to make this suggestion:

Broaden your hearings and your studies to include not just this one question of coal tar colors and other color additives, but to include all of the aspects of the Food, Drug and Cosmetics Act. It is time for that kind of look at the overall picture.

In the past 6 months or so we have had one explosion after another over phases of the law and its operation—cranberries, stilbestrol in chickens, the lipstick crisis, the food additive clearances, and so on.

I think tremendous progress has been made in alerting the general public to some of the issues involved in food, drug, and cosmetics legislation, and that this is an excellent time to take a good hard look at the basic law and its patchwork amendments and to undertake a tightening of many of their provisions.

This would, of course, carry some dangers with it—the danger perhaps that groups which have suffered economically from operation of some of the consumer-protections of the law would attempt to use such hearings and any new legislation as a means for weakening rather than strengthening the law. But I don't think they could succeed—certainly not if all of us who are deeply concerned about this problem are willing to fight off the pressures to weaken the law.

And the end result could well be a general strengthening of the law—so that the Government, for instance, would no longer have to rely on voluntary agreement in the poultry industry to take stilbestrol out of poultry feed; so that, for instance, cosmetics which are now in the twilight zone of governmental protection, can be put under the same stringent tests for safety as our food additives must now pass; so that other loopholes in the law may also be closed.

WE NEED PRETESTING OF COSMETICS

I think color additives legislation in the context of that kind of approach would be far better legislation than either of the bills now before you. For such an omnibus approach would permit you to eliminate the loopholes in the 1938 law under the new drug sanction and the similar loophole in the 1958 amendments which requires FDA to prove the harmfulness of any additive which had previously been sanctioned for use by a governmental agency.

Secretary Flemming in his testimony referred to the stilbestrol problem and the unfairness, as well as the danger to the public, of these so-called grandfather clauses covering chemicals once approved and thereafter protected against delisting until the Government can definitely prove their harmfulness.

In the field of cosmetics, the law is hopelessly obsolete. The Government at present cannot move against a suspect cosmetics item until it has proof of the product's harmfulness. My bill, H.R. 1360, and a similar bill by Congressman Delaney, would provide the same consumer safeguards on ingredients in cosmetics that the Food Additives Amendments of 1958 provided in connection with the use of chemicals in food. These cosmetics bills have been pending before you for some years, without any action or even hearings.

I think this is the year and this is the time—in connection with the color additives bills—to take up this closely related subject of safe cosmetics.

The color additives bill makes it imperative that we do so. For the color additives bill would not only change the basis under which coal tar colors could be used in cosmetics; it would also establish, for the first time, a basis for clearing in advance the safety of non-coal-tar colors used in cosmetics. That would be helpful.

But what of all of the other ingredients in cosmetics? If we are going to require manufacturers to prove the safety of their non-coal-tar color additives in cosmetics, why not in the same legislation and at the same time and under the same standards require the manu-

facturer to establish the safety of all ingredients in his cosmetics product?

At present, as you know, enough women must be harmed by a new cosmetic item to alert the Food and Drug Administration into looking into the matter; then the FDA must prove the product harmful in order to remove it from the market.

I receive letters from women from all over the country complaining about various cosmetics they have used—shampoos or wave set products they claim have caused them to lose their hair, polishes which set up allergic reactions, lotions and creams and powders and lipstick and deodorants and what not which caused embarrassment, discomfort or pain. I usually pass these complaints along to FDA and sometimes they find the product involved warrants a full-scale investigation, and other times they will report merely that the reaction was probably a rare allergic one.

WOMEN WANT SAFE LIPSTICKS

But if a woman is allergic, the label on a cosmetics item tells her nothing. She has to learn the hard—and painful—way.

Now I am aware that men are suffering, to some extent, from a product marked as a "skin darkener," an after shave lotion. It is widely advertised as being completely safe. I would assume that the men who have had to see their dermatologists about it would not quite agree with that description of safety. But how do we protect the consumer on these products—by cease-and-desist orders, and confiscation of the products, after the damage has been done?

Speaking as a woman as well as in my capacity as a Member of Congress, I urge you, Mr. Chairman, to go slow on this color additives bill and to enlarge the scope of your hearings to include all issues involved at present in the Food, Drug, and Cosmetics Act. As a woman, I am aware of the fact that some of our favorite lipstick shades may soon be off the market unless this color additives bill is passed quickly. But I am not convinced we would be doing the women of this country any favor at all to assure them the continued availability of lipstick shades which are not safe to use. True, it is claimed we don't swallow our lipstick. But I think the people who make that claim don't use the stuff themselves.

We like the bright and light shades but if they cannot safely be produced, then we prefer to do without these particular shades.

In any event, I am sure the cosmetics industry is resourceful enough—it is an extremely resourceful industry—often too much so—but I am sure it is resourceful enough to find substitute colors if it has to. And I think every woman would agree that rather than use unsafe coloring matter, we would be quite happy to settle for a darker shade if necessary, just so long as we could be completely assured it was safe.

I don't think, under this proposed legislation, that any such flat and unequivocal guarantee of safety could be made about any coal-tar color for which a tolerance had to be set. I will not and cannot argue with the scientists on that, but it is my personal opinion—if a coal-tar color is unsafe in any quantity, no matter how large, my feeling is it should not be used at all in foods, drugs, or cosmetics.

If, on the other hand, legislation is absolutely necessary to clear up some of the confusion in the color additives field, then I urge that it

be done only as part of an omnibus bill closing all loopholes in present law and including comprehensive safe cosmetics legislation.

The CHAIRMAN. Thank you very much, Mrs. Sullivan, for your very fine and forthright presentation.

Are there any questions?

Mr. ROBERTS. Mr. Chairman, I would like to add my commendation to that of the chairman for this very splendid statement. I have known of this lady's intense interest in this subject for a long time. I agree with her fully. I think that the hearings will show that she is correct in the position which she takes, and that we should go as far in the time we have available as we possibly can, and as she indicates, that the committee might expand the hearings to give the committee a chance to act in that respect.

I think that she certainly has made a fine contribution to the work of this committee. Thank you.

That is all, Mr. Chairman.

Mrs. SULLIVAN. Thank you.

The CHAIRMAN. Mr. Glenn.

Mr. GLENN. Mrs. Sullivan, as a Member of Congress, I know that you appreciate that we do not get on the stand the opinion of the consuming public, the housewife, the opinion of our women. I certainly appreciate your coming in and taking the time from your busy life to give us this very fine statement, because of the interest which you have in it.

I thank you.

Mrs. SULLIVAN. Thank you.

The CHAIRMAN. Mr. Williams?

Mr. WILLIAMS. Mr. Chairman, I am sorry that I did not get to hear the lady's testimony, but I would like to join Mr. Roberts and the others in congratulating her and expressing our appreciation for the great work she has done in this field.

She is an invaluable Member of Congress, and particularly in this field where she has done such monumental work.

Mrs. SULLIVAN. Thank you.

The CHAIRMAN. Mr. Keith.

Mr. KEITH. I have no questions.

The CHAIRMAN. Mr. Brock?

Mr. BROCK. No questions.

The CHAIRMAN. Mr. Curtin?

Mr. CURTIN. No questions.

The CHAIRMAN. Thank you again, very much. We certainly are glad to have had you here and to have received your statement.

Mrs. SULLIVAN. Thank you, Mr. Chairman.

The CHAIRMAN. Our next witness is Mr. Fuller Holloway, representing the Toilet Goods Association.

STATEMENT OF FULLER HOLLOWAY; ACCOMPANIED BY PAUL G. LAUFFER, PH. D., REPRESENTING THE TOILET GOODS ASSOCIATION, CHICAGO, ILL.

Mr. HOLLOWAY. Mr. Chairman and gentlemen of the committee, I have with me this morning Dr. Paul G. Lauffer, research director of the Northam Warren Corp., a gentleman who has had great experience in cosmetics, particularly lipsticks, and the formulation thereof.

With your permission, I would like to have Dr. Lauffer make the statement for the association, and to permit me to remain for purposes of questioning.

The CHAIRMAN. Are you Mr. Holloway?

Mr. HOLLOWAY. My name is Fuller Holloway. I am an attorney, and I am the general counsel of the association.

The CHAIRMAN. Very well. We will be glad to have the presentation made by Dr. Lauffer for your association.

You desire to have Dr. Lauffer present the statement for you?

Mr. HOLLOWAY. Yes.

The CHAIRMAN. We will be very glad to have the presentation.

Dr. LAUFFER. Mr. Chairman and gentlemen of the committee, the Toilet Goods Association, Inc., is a trade association, the members of which produce more than 90 percent of all cosmetics sold in America, and among its members are all known manufacturers of lipsticks.

We believe that the proposed legislation—with certain amendments hereinafter suggested—is highly desirable and in fact essential to enable the cosmetic industry to continue to supply safely colored make-up cosmetics of the quality which American women now use and demand.

Because of the interpretation of the Food and Drug Administration of the present provisions of the Food, Drug, and Cosmetic Act relating to colors an impossible situation presently exists. The Food and Drug Administration insists that it does not have power, under existing law, to certify a color for a use which is fully recognized to be safe and useful if at some level of ingestion it can be shown that harm may be produced in experimental animals, even though such levels are completely unrelated to the actual level of use or method of use. Thus the Food and Drug Administration insists that a color additive must be harmless in an absolute sense before it can be certified.

Evidence that a given color additive has been widely used for many years with a record of complete harmlessness is not even considered under the present law as now interpreted.

This doctrine of absolute harmlessness has been thoroughly discredited by experts and interpretations based on such a viewpoint have no real significance in evaluating the safety of color additives under conditions of use. Under such interpretation, it would seem that because common table salt is highly toxic if taken at a high level of ingestion, it should be banned from use to sprinkle on our breakfast eggs. It was stated in a release of the U.S. Department of Health, Education, and Welfare, Food and Drug Administration, dated January 13, 1959, "Chronology of Developments on Coal Tar Colors," page 3, June 1956:

> A committee appointed by the National Research Council in accordance with the recommendations of the Citizens Advisory Committee, having studied FDA's coal tar color research program, concluded that it was well chosen and included problems deserving of the highest priority.
>
> The committee commented, however, that the present law is unrealistic with respect to coal tar colors. If stated, "This committee feels compelled to indicate that the certification of a compound as 'harmless and suitable for use' in foods, drugs, and cosmetics as required under the present law, is unrealistic unless the level of use is specified. Under a rigid interpretation of this directive, many components of ordinary diet could not be certified."

The Food and Drug Administration now proposes to delete many colors presently certified and which have been certified for use in lip-

sticks for more than 20 years. This despite the fact that officials of the Food and Drug Administration, including the Commissioner and the Deputy Commissioner, have made public announcements to the effect that the Food and Drug Administration has never received any report of injury to users of lipsticks made with these colors.

The first provisions of the Food, Drug, and Cosmetic Act requiring certification of coal-tar colors 'harmless and suitable for use in cosmetics" was enacted over 20 years ago. At that time, Dr. Herbert Calvary and Dr. Anton Carlson ably set forth evidence that the colors listed for cosmetic use, purified to meet the stipulated specifications, would indeed be harmless when used in cosmetics. The proposed colors were approved for certification and the ones most desirable for cosmetic effects have been used for the past 20 years to color the make-up of millions of women. To our knowledge, no one has ever imputed to the use of these colors in cosmetics any harmful effects.

In spite of this undisputed record of safe use, we are now told that some of our most useful colors must be removed from lipstick use because animal tests have shown that when ingested, they are not harmless in an absolute sense.

Studies made under the auspices of the Toilet Goods Association indicate that the most color a woman applies to her lips, even by the most lavish use of lipstick, would be equal to about six parts per million of her diet. Other studies made, and now on file with the Food and Drug Administration, indicate that the actual maximum ingestion of color from the use of lipstick amounts to something on the order of one-tenth of one part per million of the diet.

In experiments reported by the Food and Drug Administration, rats were fed colors at levels varying from 2,500 parts per million of the diet (0.25 percent) to 20,000 parts per million (2 percent) in order to determine whether or not there could be harmful effects from ingestion of the colors. Thus the lowest level used by the Food and Drug Administration in their experiments was over 25,000 times the highest level of possible ingestion shown in the study described above with respect to lipstick colors. Even so, the Food and Drug Administration experiments did not show any harm to the rats fed some of the colors at any but the higher levels of feeding. In fact, D. & C. orange 17 indicated harm only when fed at a level of 200,000 times the indicated level of maximum possible ingestion via lipsticks.

The testimony has been with respect to millions. I know that you cannot count a million—and it is difficult to think of—but you might visualize what this difference in level is. I might say that in order to ingest color of 2 percent in your diet, a woman would have to eat 100 lipsticks a day. That was the amount fed at the high level to the animals in these experiments. No woman eats the lipstick, and the ordinary lipstick as used in the regular way would last for 3 to 6 months, so that the idea of eating 100 lipsticks a day makes you see what the difference in the level here is.

Despite the fact that the maximum possible ingestion hazard by humans using lipsticks as shown by the above-mentioned study is not more than one-tenth of one part per million of the diet, the Food and Drug Administration now takes the position that lipsticks should be considered as a product for internal use and consequently its "absolute" doctrine of harmlessness is invoked. At the same time, the

Food and Drug Administration would continue to certify these colors for topical application other than to the lips.

H.R. 7624 and S. 2197, prior to introduction by request of the Secretary of Health, Education, and Welfare, in preliminary draft form, was submitted by the Department to various industry groups and was the subject of discussion between industry and the Department. The proposed legislation takes a realistic approach to harmlessness. The proposal separates the use of colors and permits certification for specific use after due consideration of relevant safety factors as to that use. It also solves the problem connected with the possible aggregate use among different products. With intelligent administration, we believe that the proposed legislation will assure to the public its right to use of colors as well as assure that such use will be completely safe.

The proposed section 706(b)(5) of S. 2197, as amended, differs from H.R. 7624. The Department of Health, Education, and Welfare and industry are in apparent agreement that the Senate version is the proper approach in this regard.

S. 2197 does not include a provision comparable to that appearing in H.R. 7624, section 706(b)(5), relating specifically to cancer. We believe that the safety provisions otherwise included in both S. 2197 and H.R. 7624 adequately provide for complete safety in this regard. In any event, the provision in H.R. 7624 is inadequate.

We suggest that if any clause with respect to this is deemed necessary, the following language be used in lieu of the provision in H.R. 7624:

> No color additive shall be certified by the Secretary or shall be used in any food, drug, or cosmetic, if, when tested by appropriate methods, it is found to produce cancer or any other serious pathological condition in man or other animals. The term "appropriate methods" as used in this paragraph shall mean methods conforming to the proposed method of application of the color additive and the concentration in which it is proposed to be used, due allowance being made for a reasonable safety factor.

The development of cancer from any material, indeed, any other pathological condition, is dependent upon the method and route of administration of that material to the body. Consider glycerine, whose harmlessness when properly used is about as well established as human experience can provide. Glycerine is in the diet of practically every individual as a constituent of fat, and is metabolized by the same path as is the body's chief fuel, glucose. Still, it can be made to cause harm if we try to hard enough. Inject enough undiluted glycerine into the veins of a mouse, and a cranial hermorrhage will develop. Glycerine, therefore, though a universal food, is not harmless in an absolute sense. The method of application determines whether a material is harmful and any cancer clause should conform to this principle.

As explained above, the current interpretation by the Food and Drug Administration of the color provision of the Food, Drug, and Cosmetic Act would deprive the industry and American women of the use of admittedly safe lipsticks. The Food and Drug Administration has issued an order which, if it is allowed to become effective on the date set of February 1, 1960, will deprive American women of the most vital lipstick colors. The Secretary of Health, Education, and Welfare, we understand, favors this legislation as being adequate to

safeguard the public health. We assume, therefore, that there should be no objection if these colors are brought under the provisions of the proposed legislation. This can be accomplished by amending title II, section 203(b)(1) of the bills by deleting the words "on the day preceding the enactment date" and substituting the words "January 31, 1960."

We respectfully urge this committee to report the proposed legislation favorably with the above suggested amendment.

Thank you.

The CHAIRMAN. Thank you very much, Dr. Lauffer.

Do I understand that Dr. Lauffer will answer the technical questions?

Mr. HOLLOWAY. If they are technical questions, relating to scientific evidence, I would like for them to be propounded to Dr. Lauffer, because I am absolutely incapable of answering such questions.

However, I should like to add to the statement, because of the events that have occurred since the preparation of this statement and because of your questions to Secretary Flemming yesterday as to the status of lipstick colors. I would like to go a little bit further into that question presently.

The CHAIRMAN. Very well.

Mr. HOLLOWAY. The Secretary stated yesterday that these lipstick colors were an excellent example of why this legislation should be passed, to make them safe for the use of the women, and reviewed briefly the procedures whereby the delisting came about.

I would like to add to that, that in your consideration of the bill itself, you consider the following:

In February, the Department first sent word to the industry that certain colors were suspect and that they would like to have industry people come down and talk about it. A great many industry representatives then came to the Food and Drug Administration. The testing procedures were explained.

Then on April 15, the proposed order was published in the Federal Register which invited industry representatives to present their views.

On June 11, I discussed with Commissioner Larrick and Mr. Goodrich, the possible modification of the order, to permit the use of some of these colors in lipsticks, on the ground that the use of lipstick was a topical application, involving a de minimis ingestion hazard. With this possible modification in view, the association was to submit studies made under the auspices of the Toilet Goods Association with respect to the colors used in lipsticks, and the amount of dye used by manufacturers in their various lipsticks, et cetera.

At a later date, on September 2, Dr. Larrick and Mr. Goodrich met with Mr. Mayham, the executive vice president of the Toilet Goods Association and myself, at which time Dr. Larrick expressed doubts as to the proposed modification of the proposed order on the ground that, to the best of my recollection, the Food and Drug Administration scientists were not prepared to state that the data was sufficient to prove a de minimis ingestion hazard.

At the same time, Dr. Larrick stated that in any event a public hearing would be held on this matter, which was confirmed by Mr. Goodrich, who is Chief Counsel of the Food and Drug Administration.

On or about September 10, after discussion with Mr. Goodrich on the telephone, I arranged with Dr. Arnold Lehman, of the Pharmacology Department of the Food and Drug Administration for a conference between Food and Drug Administration scientists and industry scientists on other scientific aspects of this matter.

On October 5, 1959, on receiving information that the proposed order had been made final, I contacted Mr. Goodrich and expressed my consternation that the final order should be issued just prior to the meeting between the Food and Drug Administration and industry scientists. Mr. Goodrich explained that Dr. Larrick was away from Washington, and that the order, therefore, went to the desk of Mr. Harvey, who did not know of the circumstances and signed the order.

The Chief Counsel then assured me that there was no cause for the industry to be concerned by the issuance of the order, since a public hearing had been promised, and that the Food and Drug Administration would have such a hearing.

On November 3, the Toilet Goods Association entered a request for a hearing, as did some of the manufacturers in the industry.

On the basis of the statement of the Commissioner and the Chief Counsel of the Food and Drug Administration, both Mr. Mayham and myself assured the member companies of the trade association that the manufacturers concerned would be fully able to present their views.

On December 2, I read in certain trade publications that Mr. Goodrich had expressed doubt as to the necessity of holding hearings in the matter. I arranged a meeting with Mr. Goodrich, at which meeting Mr. Kleinfeld, an attorney who was representing Revlon, Inc., was present. Mr. Goodrich then stated that he was mindful of the commitment of the Food and Drug Administration to hold hearings and of the assurances that the industry would get such hearings. However, a recent case out of the Court of Appeals for the Eighth Circuit said certain things which made him doubtful that the hearings were essential, or that they were required to hold them.

On about December 30, Mr. Goodrich, by telephone, advised me that the effective date of the subject order had been extended to January 25, for reconsideration.

On January 18, I met with the Secretary of the Department of Health, Education, and Welfare, along with Mr. Goodrich and Mr. Harvey, the Deputy Commissioner, at which time the order, that is the effective date of the order, was again extended until February 1.

We do not know whether we will get a hearing or not at this moment.

If the effective date of that order of February 1 is allowed to take place without a hearing, then this legislation is going to do this industry no good, unless the courts on our request will intervene.

We do not feel that we ought to be made to go to court. This committee should change the effective date for deemed listed colors to January 31, instead of the date now made, just prior to the enactment of this legislation, as referred to in the statement presented by Dr. Lauffer. And that is because of the fact that we were assured of hearings and believed in them, and the state of the record is such that it is inadequate for us to go to court with it.

We feel like we have been placed in a position which is not fair, that it is one which we should not be in because of the state of the record.

Therefore, I do urge the committee to make the amendment suggested.

The CHAIRMAN. I do not know that I have followed you all the way, but it does not seem to me that what you have just said is compatible with what is provided for in the bill, because the bill provides that the Secretary's authority shall be effective only after public hearings have been held.

Mr. HOLLOWAY. All I am asking for, in effect, is that we be allowed to come under the provisions of this bill—that is all—and not under the provisions of the current law.

The CHAIRMAN. Of course, this bill applies to color additives.

Mr. HOLLOWAY. Yes, sir.

The CHAIRMAN. That is what we are talking about—that is what you are talking about, is it not?

Mr. HOLLOWAY. That is true, but we will not be listed as certifiable if the February 1 effective date is allowed to stand, because you will not enact this bill in the next day or two. That is what I am saying.

The CHAIRMAN. It does not make any difference what kind of legislation is passed, if it affects color additives, the Secretary will have to hold public hearings.

Mr. HOLLOWAY. That is true, under this bill. We thought that it was true under the existing law, that we had to have a public hearing before a delisting order could become effective on our application and objection, but they now say that they do not have to give us the hearing. If we do not get a hearing, and the order is made effective as of February 1, these lipstick colors will go down the drain. We cannot use them. They will not be able to be certified any more.

If we came under this bill, then we could.

The CHAIRMAN. You mean that this will change the present law?

Mr. HOLLOWAY. Exactly; exactly. I would just like to bring in the lipstick colors, that are now subject to a decertification order, under the provisions of this act—that is all—the new law.

The CHAIRMAN. All color additives are brought under this act.

Mr. HOLLOWAY. This act will not become effective, that is, these provisions would not become effective until the day preceding the enactment of this act. Right now there is currently an order which says, in effect, that on February 1 these lipstick colors may not be certified any longer.

The CHAIRMAN. In other words, without it, you cannot add the colors at all?

Mr. HOLLOWAY. That is correct, unless the court will give us relief.

The CHAIRMAN. Is that right?

Mr. HOLLOWAY. That is right.

The CHAIRMAN. Well, I would like clarifications as to whether or not an act of Congress means anything with reference to repealing the present law?

Mr. HOLLOWAY. I do not think that we have to do that. All we have to change is "any color additive which, on the day preceding the enactment date," if we changed that to, say: "any color additive which on January 31, 1960," was listed and certifiable, as a provision of this act, it would cover it.

I was reading from title II, section 103(b), which is on page 17 of the House bill. And that is, "Subject to the other provisions of this section——

(1) Any color additive which on the day preceding the enactment date, was listed as certifiable for any use or uses under section 406(b), 504, or 604, or under the third proviso of section 402(c), of the basic act, and of which a batch or batches had been certified for such use or uses prior to the enactment date * * * shall, beginning on the enactment date, be deemed to be provisionally listed under this section as a color additive for such use or uses.

Therefore, any color additive certifiable would come under the provisions of this act if listed as of that date.

The CHAIRMAN. Well, certainly, we will have to look into that problem as a matter of legislative drafting, because I was under the impression that the first section to amend the present act includes color additives—at the beginning of the paragraph it contains the words "Color Additive Amendments of 1959."

Mr. HOLLOWAY. The only question is that these particular lipstick colors, if this delisting order went into effect, would not be certified when you passed this bill.

The CHAIRMAN. That does not make any difference to me. What I am talking about here is the language in the act, what it say—does it have any effect on the present law? If in the drafting of this bill that does not cover color additives and that is not the proper term, then we would like to know what it is.

Mr. HOLLOWAY. Specifically with respect to the 17 colors that were delisted, they are color additives. All we want to be assured of is that those specific 17 colors are brought under the provisions of this act.

The CHAIRMAN. Are there exceptions made to any colors under this bill?

Mr. HOLLOWAY. No, sir. This bill would provide that any colors which were certifiable as of the day preceding the enactment date of this act would be listed for use until they were tested, and the Food and Drug Administration passed on them, whether they be used or not.

The CHAIRMAN. Are not all color additives certifiable if they meet the test?

Mr. HOLLOWAY. If they meet the test of this bill?

The CHAIRMAN. Yes.

Mr. HOLLOWAY. They will, after the enactment date of this bill.

The CHAIRMAN. That is what I mean.

Mr. HOLLOWAY. Yes, sir. These 17 are certifiable today. These 17 lipstick colors are certifiable today, but on February 2 they may not be, if this order that I had reference to comes into effect.

The CHAIRMAN. I know that, but what I am trying to get clear in the record here is this: Is an order of a Government agency more effective than an act of Congress. That is what I am trying to get at. If it is, we will just let the Department down there control it, because it then seems to be more effective than an act of Congress.

Mr. HOLLOWAY. No.

The CHAIRMAN. Are you trying to tell me that we cannot legislate to improve or change an order of the Department, an agency of Government? If so, then I would have to raise a serious question about that. I would like for you to show us where the language is deficient in that respect, so that you would make that clear in the record and we will have it for our consideration.

Mr. HOLLOWAY. Of course, I agree with you 100 percent. I do not think that anyone should take issue on your proposition. The

only thing that I am suggesting is that the legislation is such that when you give an order by way of this legislation, that we want these 17 lipstick colors to come under what you are enacting.

The CHAIRMAN. Where is there any language here that excepts them?

Mr. HOLLOWAY. The language on page 17. Let us take a color. I will just take one, D. & C. red No. 12. On February 1, if the order of the Commissioner now becomes effective, as it will unless something is done by the Food and Drug Administration, on February 1 we will not be able to use that red color any more. This act will not pick up that color. We cannot use it. The test of this act will not be applicable to it. The color will be lost, unless at some future date, after another year, we might come in after testing and show that it is all right. That is true, that that can be done. But what we would like to do is to be able to use it and let the provisions of this act be the standard by which it will be tested.

The CHAIRMAN. If the color can meet the standards of the requirements, then it becomes certifiable, does it not?

Mr. HOLLOWAY. Yes, sir; then it does. This red color would continue, if we are certified right now—it will continue to be certifiable until decertified under this act. That is all that we are asking for, to be decertified under this act, not under the old law.

The CHAIRMAN. The committee, I feel, will have to go into that further. Does that conclude your presentation?

Mr. HOLLOWAY. Yes.

The CHAIRMAN. Mr. Glenn, any questions?

Mr. GLENN. Mr. Chairman, thank you.

On page 6 of the statement, you say that—

> the current interpretation by the Food and Drug Administration of the color provision of the Food, Drug, and Cosmetics Act would deprive the industry and American women of the use of admittedly safe lipsticks.

That is at the bottom of the page.

What do you mean by "admittedly safe lipsticks?"

Dr. LAUFFER. By that I refer to the previous statement that these lipsticks have been used—that is, these colors have been used in lipsticks ever since the initial certification, for 20 years. They have been used by millions of women all over the country, and no harm has been imputed to the use of these colors in these lipsticks.

Mr. GLENN. Is that substantiated by any declaration of any governmental agency, or any industrial agency?

Dr. LAUFFER. We have the statements of the Commissioner and the Deputy Commissioner that they know of no case of harm being done by these colors used in lipsticks. And the only harmfulness that has been imputed to them is the harmfulness in the level of 2 percent or 1 percent in animal diets, which is entirely out of line with the effect in lipsticks.

Mr. GLENN. Is Red 17 included in that group?

Dr. LAUFFER. Red 17?

Mr. HOLLOWAY. That number was just picked out of the air.

Dr. LAUFFER. I do not believe that Red 17 is one of them, no.

Mr. GLENN. When you speak of the most vital lipstick colors, what do you refer to? The reds or the oranges?

Dr. LAUFFER. Red 17 would not be one of the most vital lipstick.

colors. There are a number in the list of 17 which are fairly vital to the manufacturer of lipsticks.

Mr. GLENN. These would not be permitted to be marketed after February 1, 1960, unless we changed the wording of the act; is that it?

Dr. LAUFFER. As I understand it, they would not be permitted to be certified after that date. This sets the date for end of certification, what the cutoff date for the marketing would be, as to that, however, I do not know.

Mr. GLENN. That is all. Thank you.

The CHAIRMAN. Mr. Roberts.

Mr. ROBERTS. Dr. Lauffer, I believe you are not a doctor of medicine?

Dr. LAUFFER. I am a chemist.

Mr. ROBERTS. How long have you been employed by the association in this type of work?

Dr. LAUFFER. I am not employed by the association, sir. I am employed by a member of the association. I have been very much interested in the association's work with colors, because I have been working for my employer on lipsticks for over 27 years.

Mr. ROBERTS. Who is your employer?

Dr. LAUFFER. Northam Warren Corp.

Mr. ROBERTS. You use certain figures in your testimony at the top of page 4 of it, referring to the fact that it says:

> In experiments reported by the Food and Drug Administration, rats were fed colors at levels varying from 2,500 parts per million of the diet to 20,000 parts per million in order to determine whether or not there could be harmful effects from ingestion of the colors.

It was stated yesterday by Dr. Flemming, who quoted some figures, that the average use in the tests in animals was two parts to a billion. Is that the figure he used?

Dr. LAUFFER. I was not here yesterday.

Mr. ROBERTS. I was under the impression that they took the position that even in that test of the ingestion of the material, if it was found to be carcinogenic, that it would be dangerous for the human being to ingest that material.

Do you agree with that statement?

Dr. LAUFFER. Yes; if you feed it. I certainly would agree. As I understand it, from what I have read of Secretary Flemming's prepared statement, and from what I have been told, those figures referred to substances not at all connected with these color additives.

Mr. ROBERTS. That is right. They were materials of some other kind.

Dr. LAUFFER. As I understand it, the question of carcinogenicity does not come up in respect to these color additives, so far as the tests that have been made.

Mr. ROBERTS. On what basis, then, does the Food and Drug Administration hold these colors can no longer be used, at least temporarily?

Dr. LAUFFER. I believe on the basis that the current law says that the colors shall be harmless, and without qualifying that with any statement as to the method or the level of use; in other words, if they can be shown to be harmful when used in any concentrated amount, they would not qualify under the current law.

Mr. ROBERTS. And insofar as the present hearings before the Food and Drug concerning chemicals mentioned, the minimum would be a question of where the burden of proof is, whether on the industry or on the department, to show that these colors are harmless?

Dr. LAUFFER. I did not hear the last part of that question.

Mr. ROBERTS. Insofar as the present hearings before the Food and Drug Administration are concerned, concerning the chemicals mentioned, the minimum would be a question of where the burden of proof is: that is, whether on the industry or on the department to show that these colors are harmless?

Mr. HOLLOWAY. May I answer that, sir?

You are talking about the proposed hearings in the Food and Drug Administration?

Mr. ROBERTS. Yes; as to the banning of the colors.

Mr. HOLLOWAY. When those colors were put forth for decertification or delisting, we made objections to it on the ground that they were delisted for uses as D. & C. colors, that means that can be used internally. They were relisted so that they could be used externally, that is, if they were, we can still use all of these colors in cosmetics, other than cosmetics applied to the lips.

Mr. ROBERTS. That concerned the internal parts of the body?

Mr. HOLLOWAY. By the Food and Drug Administration, yes; our point was that the amount of ingestion is so deminimis that you should not consider them as an internal product at all; they are an external product.

These figures would indicate the deminimis order of ingestation.

Mr. ROBERTS. Would it not be possible, even if you used externally these colors, for these colors to get into the bloodstream?

Mr. HOLLOWAY. You mean through some abrasion in the skin?

Mr. ROBERTS. Well, either that way or in some other way, by absorption?

Mr. HOLLOWAY. Of course, if you follow that position to its logical conclusion, a color that is used in a fingernail polish, I presume that a woman might bite her fingernail and get a small amount of that color. That is, in that extreme topical application. But even the Food and Drug Administration, under its current interpretation, would not pick that up as an ingestible color.

Mr. ROBERTS. You know, of course, that there has been some evidence that some colors that have been used have been known to cause infection and to give quite a bit of trouble.

Mr. HOLLOWAY. They are, Mr. Congressman, in a different category and are covered under a different part of the act. You cannot use them anywhere else except for coloring hair. That problem is not affected by this proposed legislation.

Mr. ROBERTS. You also know how you arrive at these colors—what the chemical processes are that you go through to select the various chemicals used in the lipsticks.

Dr. LAUFFER. You mean the process of determining whether or not they are suitable for lipsticks?

Mr. ROBERTS. Yes.

Dr. LAUFFER. Well, the processing by the Food and Drug Administration originally was very well outlined by Dr. Calvary and Dr. Carlson in 1939 when the original hearings were held, and they out-

lined the reasons, that is, their reasons, for selecting these colors and for not selecting certain other ones at that time.

Mr. ROBERTS. What I want to get at is this: What is the procedure on the part of industry before it gets to the Food and Drug Administration? In other words, when you design a color and you want to get it certified, what kind of tests do you go through before you present these colors to the Food and Drug Administration?

Dr. LAUFFER. These colors are presented not by the cosmetic industry, but by the manufacturers of dyes. There are only three, so far as I know, manufacturers of certified colors. And they will conduct pharmacological tests of their own beforehand to determine that they believe they are safe for the proposed use. And when they are submitted to the Food and Drug Administration, records of those tests would have to be given and, of course, the Food and Drug Administration would look over those tests and perform their own tests.

I do not want to pose as an expert in this field, because I think that some of the dye experts will be on later and could go into that in more detail.

Mr. ROBERTS. Do you know of any dye that they have ever rejected in the past after they made tests?

Dr. LAUFFER. That is a dye that was proposed as a new color to be added to the certified list?

Mr. ROBERTS. Yes.

Dr. LAUFFER. No, I do not.

Mr. ROBERTS. That is all.

The CHAIRMAN. Mr. Keith?

Mr. KEITH. No questions.

The CHAIRMAN. Mr. Curtin?

Mr. CURTIN. No questions.

The CHAIRMAN. Mr. O'Brien?

Mr. O'BRIEN. No questions.

The CHAIRMAN. Mr. Rogers?

Mr. ROGERS of Florida. I notice in your statement on page 2 that you state that common table salt is highly toxic if taken at a high level of ingestion.

What is the level of toxicity—do you have the facts on that?

Dr. LAUFFER. I do not know about the lethal level for humans, but I do know that for animals, as little as 6 percent of the diet has been shown to be fatal. That is sodium chloride.

Mr. ROGERS of Florida. As little as 6 percent. Could you supply the facts for the record as to that?

Dr. LAUFFER. I do not have the reference with me, but I could give them.

(The information furnished by Dr. Lauffer is as follows:)

TOXICITY OF SODIUM CHLORIDE

There is an extensive literature on the damaging effects of diets high in sodium chloride. The most common effects appear to be high blood pressure and swelling of various tissues. Only a few examples will be given.

G. R. Meneely et al., J. Exptl. Med. 98: 71–80, 1953, reported that in a group of male rats fed a diet containing 7- to 9.8 percent sodium chloride for up to 12 months, 18 percent of the animals developed edema and renal failure, lipemia, and severe anemia.

H. Paver, A. Robertson, and J. E. Wilson, J. Comp. Pathol. Therap. 63: 31-47, 1953, found that sodium chloride at a concentration of 3.5 to 7.9 percent of the

dry diet caused 30-percent mortality in newly hatched chicks. Hearts were enlarged, and kidneys were enlarged and congested.

F. Gross, P. Loustalot, and F. Sulser, Naunyn-Schmiedeberg's Arch. Exptl. Pathol, Pharmakol, 229: 381–8, 1956, reported that rats developed hypertension when their drinking water contained 1.5-percent sodium chloride.

C. I. Boyer, Jr., and J. A. Brown, Rept. N.Y. State Vet. Coll. Cornell Univ. 1954–55: 34, reported that turkey poults died when kept on 0.85-percent sodium chloride solution instead of drinking water.

J. McDonough and C. M. Wilhelmj, Am. J. Digestive Diseases 21: 180–181, 1954, fed a healthy man with normal blood pressure 25 to 60 grams sodium chloride daily (about 2 to 4 percent of diet) for 23 days. A gradual, progressive, highly significant increase of blood pressure occurred, also swelling of tissues of face, arms, and legs.

L. K. Dahl and R. A. Love, J. Am. Med. Assn. 164: 397–400, 1957, found that humans on a high-salt diet had a higer incidence of hypertension.

The CHAIRMAN. Mr. Brock?

Mr. BROCK. You said that these dyes were not cancer-producing dyes. What is the harmful effect that a human being might incur by a large dose of these dyes? What organ would it affect, if you ate, as you said, 100 lipsticks a day?

Dr. LAUFFER. Sir, I do not know what the harmful effect on the human would be because, of course, that sort of work is not carried out on human beings. It is carried out on animals, and it is only by inference—by use of the best parallels that you can think of that you would assume that it might produce the same effect in humans.

There were various effects noted in the report of the Food and Drug Administration as to the effect on animals, and they were so numerous that I could not even remember them now.

The principal effect, as I recall, that has been noted in humans of any colors delisted was the production of diarrhea by the consumption of large amounts containing it. It was not done deliberately, but that was in the report.

Mr. BROCK. Then going to the testing on rats, what is the first organ affected, or do they know that a certain organ is affected by the ingestion of these colors?

Dr. LAUFFER. I do not believe that you could make a blanket answer to that question, because it would depend on various factors. There are different effects from the different colors.

Mr. BROCK. I see. Thank you.

That is all I have, Mr. Chairman.

Mr. GLENN. May I ask one more question?

The CHAIRMAN. Yes.

Mr. GLENN. Will you tell us the 17 colors which have been banned by the Food and Drug Administration? Will you tell us what those colors are?

Dr. LAUFFER. If I have the list here—yes, sir, here it is. It is:

D. & C. Orange No. 5; D. & C. Orange No. 6; D. & C. Orange No. 7; D. & C. Orange No. 17; D. & C. Red No. 8; D. & C. Red No. 9; D. & C. Red No. 10; D. & C. Red No. 11; D. & C. Red No. 12; D. & C. Red No. 13; D. & C. Red No. 19; D. & C. Red No. 20; D. & C. Red No. 33; D. & C. Red No. 37; D. & C. Yellow No. 7; D. & C. Yellow No. 8; D. & C. Yellow No. 9.

I believe that completes the list, that that is all.

The CHAIRMAN. Those are the 17 that you referred to?

Mr. LAUFFER. Yes, the ones that have been proposed for delisting.

The CHAIRMAN. For delisting?

Dr. LAUFFER. Yes.

The CHAIRMAN. In other words, to be taken off and not to be permitted to be used?

Dr. LAUFFER. Yes, they would not be certified any more.

That is the basis of the order, as I understand it, is that the certification would be denied after the order becomes effective.

The CHAIRMAN. Yet if you show by proper testing, and so forth, that they are not harmful, then they can be certified?

Dr. LAUFFER. That is true. As I understand it, Secretary Flemming testified yesterday that he has evidence now to show that the majority at least of these colors would be harmless for use in cosmetics, but if they should be removed from the certified list, there would be a certain hiatus in time before the new law could pick them up and put them back on, even though the evidence is all there to indicate that they are harmless under conditions of use.

I do not know how long that delay would be, but we do feel that the new bill should state that the colors that were certifiable on January 30 should be continued until the Secretary has evidence that they should not be.

Then there would be a continuity of use and these colors, which everyone seems to agree are harmless, would not be thrown out, because the wording of the present law insists that they should be.

The CHAIRMAN. You mean as to any of these which the Secretary has said already have been found to be carcinogenic—do you mean those?

Dr. LAUFFER. We do not propose that any substance that has been shown to be carcinogenic should be continued.

The CHAIRMAN. You said that he said yesterday they had already been so found.

Dr. LAUFFER. I said that he had said that these colors had been found to be harmless under conditions of use. This question of carcinogenicity has not been raised in connection with these colors.

The CHAIRMAN. Why did he delist them?

Dr. LAUFFER. Because of the present law which says that if they are harmful in any concentration, that is, 2 percent of the diet fed to animals for a long time, they came under the present law, even though he himself realizes they are not harmful under conditions of their use.

The CHAIRMAN. Well, apparently, I am going to have to try to analyze each of these, because it is a complicated thing.

Dr. LAUFFER. Yes.

The CHAIRMAN. I do not see why those who draft the legislation cannot get simpler terms for us to deal with. But the bill does state, and I am going to read subsection (c) of proposed section 203:

> Upon request of any person, the Secretary, by regulations issued under subsection (d), shall without delay, if on the basis of the data before him he deems such action consistent with the protection of the public health, provisionally list a material as a color additive for any use for which it was listed, and for which a batch or batches of such material had been certified, under sections 406(b), 504, or 604 of the basic act prior to the enactment date, although such color was no longer listed and certifiable for such use under such sections on the day preceding the enactment date.

Dr. LAUFFER. We agree that he could take up again the evidence on these colors ad could eventually relist them, but we believe that there would be a certain delay in doing that, that could be avoided if the date is set as of January 30.

The CHAIRMAN. Regardless of the need of testing and the proving of these—is that what you are trying to get at here?

Dr. LAUFFER. No, sir. I believe that the testing has already been done by the Department. They have found the levels of some of these dyes at which harm is caused, and I believe they have also found the levels at which they are harmless.

The CHAIRMAN. Then to get down to the crux of it, the only question that you have is if they are delisted, that there will be a period of time before they can be picked up again?

Dr. LAUFFER. Yes, it is a matter of delay—needlessly cutting it off, and reestablishing the use of the color.

The CHAIRMAN. There is one other thing on which I want to get a little clearer explanation.

On page 6 of your statement you propose a substitute in the language to the so-called Delaney amendment, is that right?

Dr. LAUFFER. Yes, sir.

The CHAIRMAN. In other words, you would substitute the language that you have indicated here for paragraph (B) on page 10 of the bill?

Dr. LAUFFER. Yes.

The CHAIRMAN. In reading this and comparing it, what is the actual difference between them?

Dr. LAUFFER. I would like to make it clear in answering this, Mr. Chairman, that the cosmetic manufacturers, certainly, do not believe they have any immediate interest in this clause because of the statements of Secretary Flemming about the color additives are not even being suspected of being carcinogens at this point.

The ones that have been proposed for delisting have been proposed because of other harmful effects, so that we have no immediate interest in this, but just in general we believe that the danger of cancer being caused by any substance is not different in kind from the danger of other pathological conditions, and that the method of application or of use does have a great deal to do in determining whether a substance is harmful, either as a carcinogen or as another pathological agent. And it seems to us that this wording took cognizance of that fact.

The CHAIRMAN. The Secretary has said that these conditions have been found to exist. You use the phrase, "by appropriate methods," which is in your proposal, and in the bill it is "which are appropriate for the evaluation"—you do use that language in yours, do you not?

Dr. LAUFFER. Mr. Chairman——

The CHAIRMAN. What are "appropriate measures"? It seems to me that you ought to limit or define the language.

Dr. LAUFFER. That is true. In the final analysis, of course, the appropriate methods would be a matter for the Food and Drug Administration, andthe Department of Health, Education, and Welfare to determine—methods that they feel are adequate to convince them that a material is safe.

The CHAIRMAN. The last three lines in what you propose—I do not want to belabor that point too much—but from a legal standpoint, it seems to me like it would be more proper to say that Congress could do it. I am not sure as to whether to take too seriously the statement you made as to the position of the Secretary yesterday, that you

might not be interested in this at all, because as I understand it, he agrees to accept the language that was proposed—he agrees to accept those changes—this particular provision which is included in the bill, as brought forth by some of the industry.

You propose another change. You say that you will take them if we will include this paragraph. I am inclined to think that you had something in mind when you said that you would do that. We had better give that another thought.

Thank you very much for your appearance, gentlemen.

Mr. HOLLOWAY. Thank you.

Dr. LAUFFER. Thank you.

(The following information was later received for the record:)

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
FOOD AND DRUG ADMINISTRATION,
Washington, D.C., FEBRUARY 5, 1960.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: During our recent conversation about the 17 lipstick colors proposed for removal from the permitted drugs and cosmetic list, you asked for information about our decision on industry's request for a hearing, so you could insert the material in the record of the current hearings on color additives legislation following the testimony of Mr. Fuller Holloway.

I am glad to forward copies of an announcement published in the Federal Register on February 3 and an accompanying press release stating that we have scheduled a public hearing on this matter for February 17, 1960.

With personal regards,

GEORGE P. LARRICK,
Commissioner of Food and Drugs.

[For immediate release Saturday, Jan. 30, 1960]

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
FOOD AND DRUG ADMINISTRATION,
Washington, D.C.

A public hearing will be held, beginning February 17, to determine whether 14 coloring materials used principally in lipstick will be removed from the list of colors certified as safe by the Food and Drug Administration, Commissioner George P. Larrick announced today.

In making the announcement, Mr. Larrick called attention to the fact that the law makes provision for such hearings when they are requested by individuals and business concerns and when reasonable grounds for such hearings are given.

The hearing on the lipstick colors was requested by representatives of the drug, cosmetic, and color industries and has been called, Mr. Larrick said, for the purpose of taking testimony on the following questions raised by the industry representatives:

1. Whether the toxicity studies on the tested colors were sufficiently complete to justify the conclusion that the colors are not harmless.

2. Whether similarities in the chemical composition of seven colors which were tested and seven related colors which were not tested is a sufficient basis for concluding that the untested colors are not harmless.

"As soon as the evidence submitted on these questions has been evaluated, a decision will be made public immediately," Mr. Larrick said.

"If the evidence presented at this hearing does not invalidate the results of scientific studies conducted by the Food and Drug Administration or the conclusions drawn, the colors will be taken off the 'harmless' list and the order will be made effective as soon as possible after the completion of the review of the hearing record," Mr. Larrick said.

"It is important to settle the issue whether materials that are not harmless are being consumed, even in small quantities. If such materials are being con-

sumed, the law requires that they be taken off the harmless list. They cannot be put back on the harmless list, once removed, unless a new law is passed authorizing the establishment of tolerances and unless new evidence is developed on the basis of which safe tolerances can be established."

A proposal to remove 17 colors from the list was announced by the Food and Drug Administration on April 15, 1959, and a final order was published in the Federal Register on October 6, 1959, effective January 7, 1960. The effective date was postponed to January 25, 1960, and later to February 1, 1960, to allow time to study more fully objections to the order and requests for a hearing filed with the Food and Drug Administration.

In announcing the hearing on the 14 colors, Commissioner Larrick also announced that 3 of the colors cited in the original order (D. & C. red Nos. 11, 12, and 13) are being restored to the harmless list on the basis of subsequent information developed by the Food and Drug Administration with respect to these colors.

The three colors being restored to the harmless list were initially cited because their chemical composition was closely related to the chemical composition of D. & C. Red No. 10, which had proved to be toxic in short-term animal feeding tests. The conclusion with respect to the chemical composition of Red Nos. 11, 12, and 13 was challenged by the industry, and subsequent short-term feeding tests with the three colors did not produce harmful effects in the test animals. Longer term tests, however, will be conducted for the three colors to determine whether their classification as "harmless" should be continued.

Two other colors cited for delisting in the initial order because of similarity of their chemical composition to colors which had been found to be toxic when fed to test animals are D. & C. Red Nos. 8 and 37. Subsequent short-term tests in which these colors were fed to laboratory animals produced evidence of injury. The two colors were fed at levels of 0.25, 0.50, 1, and 2 percent. Red No. 8 caused enlargement of the spleen at all levels and abnormal red blood cells at 0.5 percent and above. Red No. 37 caused enlargement of the liver and abnormal red blood cells at all levels. These results were consistent with those developed in the original tests with the other seven colors. Toxicity studies with the other five colors cited because of their chemical composition have not yet been conducted.

NOTE.—A copy of the order as published in the Federal Register of October 6, 1959, which includes results of toxicity studies with laboratory animals, is attached for reference.

[Published in the Federal Register, Oct. 6, 1959]

TITLE 21—FOOD AND DRUGS

CHAPTER I—FOOD AND DRUG ADMINISTRATION, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

SUBCHAPTER A—GENERAL

PART 9—COLOR CERTIFICATION

DELETION OF CERTAIN D & C COAL TAR COLORS FROM LIST SUBJECT TO CERTIFICATION; FINAL ORDER

In the matter of deleting D & C Orange No. 5, D & C Orange No. 6, D & C Orange No. 7, D & C Orange No. 17, D & C Red No. 8, D & C Red No. 9, D & C Red No. 10, D & C Red No. 11, D & C Red No 12, D & C Red No. 13, D & C Red No. 19, D & C Red No. 20, D & C Red No. 33, D & C Red No. 37, D & C Yellow No. 7, D & C Yellow No. 8, and D & C Yellow No. 9 from the list of coal tar colors subject to certification and adding to the list of colors certifiable for external use only all the colors named except D & C Orange No. 6, D & C Orange No. 7, D & C Red No. 20, and D & C Yellow No. 9.

In response to the notice of proposed rule making in the above-identified matter published in the Federal Register of April 15, 1959 (24 F.R. 2873), numerous views and comments were received. The Food and Drug Administration has reviewed the comments submitted, together with other available relevant information.

The authority contained in sections 504 and 604 of the Federal Food, Drug, and Cosmetic Act provides for the listing and certification of only those coal tar

colors that are harmless and suitable for use. Ninety-day subacute feeding tests on rats were conducted by the Food and Drug Administration, employing seven of the colors at four levels in the diets: 0.25 percent, 0.5 percent, 1 percent, and 2 percent, with the following results:

D & C. Orange No. 5.—One-half of the animals at the 2 percent level died. Stunted growth occurred at 1 percent and 0.5 percent levels. Red blood cells were decreased at 2 percent and 1 percent levels.

D & C Orange No. 17.—Anemic condition produced at the 2 percent level.

D & C Red No. 9.—Spleens enlarged at all levels. Hemoglobin lowered at 1 percent and 2 percent levels.

D & C Red Nos. 10 and 33.—Enlarged spleens at all levels.

D & C Red No. 19.—Growth rate retarded at all levels. One hundred percent mortality at the 2 percent level in 7 weeks. Liver damage evident at the 2 percent level and testes atrophied at 1 percent.

D & C Yellow No. 7.—Granulation of the kidneys produced at 1 and 2 percent levels.

The levels of feeding are toxicologically significant and the results establish to the satisfaction of trained pharmacologists that the materials tested are toxic. They do not establish the precise toxicity, and additional long-term tests on at least two species of warm-blooded animals, such as the rat and the dog, will be required to delineate fully the entire toxic potential of these coal tar colors.

On the basis of these results, it is concluded:

1. That the seven above-named colors and the following chemically related colors are not harmless, and hence are not eligible for listing for use in drugs and cosmetics:

D & C Orange Nos. 6 and 7 (related to D & C Orange No. 5).
D & C Red No. 8 (related to D & C Red No. 9).
D & C Red Nos. 11, 12, and 13 (related to D & C Red No. 10).
D & C Red Nos. 20 and 37 (related to D & C Red No. 19).
D & C Yellow Nos. 8 and 9 (related to D & C Yellow No. 7).

2. That the Ext. D & C coal tar colors involved in this order are harmless and suitable for use in externally applied drugs and cosmetics as that term is defined in section 9.1(n) of the color-certification regulations (21 CFR 9.1(n) (24 F.R. 3851)).

Therefore, pursuant to the authority of the Federal Food, Drug, and Cosmetic Act (secs. 504, 604–701, 52 Stat. 1052, 1055, as amended, 70 Stat. 919, 72 Stat. 948; 21 U.S.C. 354, 364, 371), vested in the Secretary of Health, Education, and Welfare, and delegated to the Commissioner of Food and Drugs (22 F.R. 1045, 23 F.R. 9500). *It is ordered*, That the color-certification regulations (24 F.R. 3851) be amended as set forth below:

1. Part 9 is amended by deleting therefrom the following sections:

Sec. 9.130 D & C Yellow No. 7.
Sec. 9.131 D & C Yellow No. 8.
Sec. 9.132 D & C Yellow No. 9.
Sec. 9.153 D & C Red No. 8.
Sec. 9.154 D & C Red No. 9.
Sec. 9.155 D & C Red No. 10.
Sec. 9.156 D & C Red No. 11.
Sec. 9.157 D & C Red No. 12.
Sec. 9.158 D & C Red No. 13.
Sec. 9.164 D & C Red No. 19.
Sec. 9.165 D & C Red No. 20.
Sec. 9.178 D & C Red No. 33.
Sec. 9.182 D & C Red No. 37.
Sec. 9.202 D & C Orange No. 5.
Sec. 9.203 D & C Orange No. 6.
Sec. 9.204 D & C Orange No. 7.
Sec. 9.214 D & C Orange No. 17.

2. Part 9 is further amended by adding thereto the following new sections:

§ 9.311 Ext D & C Yellow No. 11.

3,6-Fluorandiol.
Volatile matter (at 135° C.), not more than 2.0 percent.
Insoluble matter (alkaline solution), not more than 1.0 percent.
Ether extracts (from alkaline solution), not more than 0.5 percent.
Chlorides and sulfates of sodium, not more than 2.0 percent.

Mixed oxides, not more than 1.0 percent.
Pure dye (as determined by titration with titanium trichloride), not less than 96.0 percent.

§ 9.312 Ext D & C Yellow No. 12.

Disodium salt of 9-*o*-carboxyphenyl-6-hydroxy-3-isoxanthone.
Volatile matter (at 135° C.), not more than 10.0 percent.
Water-insoluble matter, not more than 1.0 percent.
Ether extracts, not more than 0.5 percent.
Chlorides and sulfates of sodium, not more than 8.0 percent.
Mixed oxides, not more than 1.0 percent.
Pure dye (as determined by titration with titanium trichloride), not less than 82.0 percent.

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§ 9.354 Ext D & C Red No. 15.

Monosodium salt of 1-(4-chloro-*o*-sulfo-5-tolylazo)-2-naphthol.
Volatile matter (at 135° C.), not more than 10.0 percent.
Ether extracts, isopropyl ether), not more than 0.5 percent.
Lake Red C Amine, not more than 0.2 percent.
β-Naphthol, not more than 0.2 percent.
Chlorides and sulfates of sodium, not more than 5.0 percent.
Mixed oxides, not more than 1.0 percent.
Pure dye (as determined by titration with titanium trichloride), not less than 85.0 percent.

§ 8.355 Ext D & C Red No. 16.

Barium salt of 1-(4-chloro-*o*-sulfo-5-tolylazo)-2-naphthol.
Volatile matter (at 135° C.), not more than 5.0 percent.
Ether extracts (isopropyl ether), not more than 0.5 percent.
Lake Red C Amine, not more than 0.2 percent.
β-Naphthol, not more than 0.2 percent.
Chlorides and sulfates of sodium, not more than 6.0 percent.
Oxides of iron and aluminum, not more than 1.0 percent.
Pure dye(as determined by titration with titanium trichloride), not less than 87.0 percent.

§ 9.356 Ext D & C Red No. 17.

Monosodium salt of 2-(2-hydroxy-1-naphthylazo)-1-naphthalene-sulfonic acid.
Volatile matter (at 135° C.), not more than 5.0 percent.
Ether extracts (isopropyl ether), not more than 0.5 percent.
Tobias acid, not more than 0.2 percent.
-Naphthol, not more than 0.2 percent.
Chlorides and sulfates of sodium, not more than 5.0 percent.
Mixed oxides, not more than 1.0 percent.
Pure dye (as determined by titration with titanium trichloride), not less than 90.0 percent.

§ 9.357 Ext D & C Red No. 18.

Calcium salt of 2-(2-hydroxy-1-naphthylazo)-1-naphthalene-sulfonic acid.
Volatile matter (at 135° C.), not more than 5.0 percent.
Ether extracts (isopropyl ether), not more than 0.5 percent.
Tobias acid, not more than 0.2 percent.
β-Naphthol, not more than 0.2 percent.
Chlorides and sulfates (as calcium salts), not more than 5.0 percent.
Oxides of iron and aluminum, not more than 1.0 percent.
Pure dye (as determined by titration with titanium trichloride), not less than 90.0 percent.

§ 9.358 Ext D & C Red No. 19.

Barium salt of 2-(2-hydroxy-1-naphthylazo)-1-naphthalene-sulfonic acid.
Volatile matter (at 135° C.), not more than 0.5 percent.
Ether extracts (isopropyl ether), not more than 0.5 percent.
Tobias acid, not more than 0.2 percent.
-Naphthol, not more than 0.2 percent.
Chlorides and sulfates of sodium, not more than 5.0 percent.
Oxides of iron and aluminum, not more than 1.0 percent.
Pure dye (as determined by titration with titanium trichloride), not less than 90.0 percent.

§ 9.359 Ext D & C Red No. 20.

Strontium salt of 2-(2-hydroxy-1-naphthylazo)-1-naphthalene-sulfonic acid.
Volatile matter (at 135° C.), not more than 5.0 percent.
Ether extracts (isopropyl ether), not more than 0.5 percent.
Tobias acid, not more than 0.2 percent.
-Naphthol, not more than 0.2 percent.
Chlorides and sulfates (as sodium salts), not more than 5.0 percent.
Oxides of iron and aluminum, not more than 1.0 percent.
Pure dye (as determined by titration with titanium trichloride), not less than 90.0 percent.

§ 9.360 Ext D & C Red No. 21.

3-Ethochloride of 9 - *o* - carboxyphenyl-6-diethylamino-3-ethylimino-3-isoxanthene.
Volatile matter (at 135° C.), not more than 5.0 percent.
Water-insoluble matter, not more than 1.0 percent.
Ether extracts (from acid solution), not more than 0.5 percent.
Diethyl-*m*-aminophenol, not more than 0.2 percent.
Chlorides and sulfates of sodium, not more than 2.0 percent.
Mixed oxides, not more than 1.0 percent.
Pure dye (as determined by titration with titanium trichloride), not less than 92.0 percent.

§ 9.361 Ext D & C Red No. 22.

3-Ethostearate of 9 - *o* - carboxyphenyl-6-diethylamino-3-ethylimino-3-isoxanthene.
Volatile matter (at 80° C.), not more than 2.0 percent.
Sulfated ash, not more than 3.0 percent.
Matter, insoluble in benzene, not more than 0.5 percent.
Diethyl-*m*-aminophenol, not more than 0.2 percent.
Stearic acid (not part of the dye), not more than 50.0 percent.
Pure dye (as determined by titration with titanium trichloride), not less than 50.0 percent.

§ 9.362 Ext D & C Red No. 23.

Disodium salt of 8-amino-2-phenylazo-1-naphthol-3,6-disulfonic acid.
Volatile matter (at 135° C.), not more than 6.0 percent.
Water-insoluble matter, not more than 1.0 percent.
Ether extracts, not more than 0.5 percent.
Aniline, not more than 0.2 percent.
Chlorides and sulfates of sodium, not more than 10.0 percent.
Mixed oxides, not more than 1.0 percent.
Pure dye (as determined by titration with titanium trichloride), not less than 82.0 percent.

§ 9.424 Ext D & C Orange No. 5.

4,5-Dibromo-3,6-fluorandiol.
Volatile matter (at 135° C.), not more than 5.0 percent.
Insoluble matter (alkaline solution), not more than 1.0 percent.
Ether extracts (from alkaline solution), not more than 0.5 percent.
Sodium chloride, not more than 3.0 percent.
Mixed oxides, not more than 1.0 percent.
Free bromine, not more than 0.02 percent.
Permitted range of organically combined bromine in pure dye, 31.0-35.0 percent.
Pure dye (as determined gravimetrically), not less than 90.0 percent.

§ 9.425 Ext D & C Orange No. 6.

1-(2,4-Dinitrophenylazo)-2-naphthol.
Volatile matter (at 135° C.), not more than 5.0 percent.
Sulfated ash, not more than 1.0 percent.
Matter insoluble in toluene, not more than 1.5 percent.
2,4-Dinitroaniline, not more than 0.2 percent.
β-Naphthol, not more than 0.2 percent.
Pure dye (as determined by titration with titanium trichloride), not less than 90.0 percent.

* * * * * * *

Any person who will be adversely affected by the foregoing order may at any time prior to the thirtieth day from the date of its publication in the Federal Register file with the Hearing Clerk, Department of Health, Education, and Welfare, Room 5440, 330 Independence Avenue, SW., Washington 25, D.C., written objections thereto. Objections shall show wherein the person filing will be adversely affected by the order, shall specify with particularity the provisions of the order deemed objectionable and the grounds for the objections, and shall request a public hearing. Objections may be accompanied by a memorandum or brief in support thereof. All documents shall be filed in quintuplicate.

Effective date. This order shall become effective 90 days from the date of its publication in the Federal Register, except as to any provisions that may be stayed by the filing of objections thereto. Notice of the filing of objections, or lack thereof, will be announced by publication in the FEDERAL REGISTER.

(Sec. 701, 52 Stat. 1055, as amended 70 Stat. 919, 72 Stat. 948; 21 U.S.C. 371. Interprets or applies secs. 504, 604, 52 Stat. 1052, 1055; 21 U.S.C. 354, 364)

Dated: September 29, 1959.

JOHN L. HARVEY,
Deputy Commissioner of Food and Drugs.

[Published in the Federal Register, February 3, 1960]

TITLE 21—FOOD AND DRUGS

CHAPTER I—FOOD AND DRUG ADMINISTRATION, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

SUBCHAPTER A—GENERAL

PART 9—COLOR CERTIFICATION

ORDER ACTING UPON OBJECTIONS TO FINAL ORDER DELISTING CERTAIN D & C COAL-TAR COLORS FROM THE LIST SUBJECT TO CERTIFICATION; NOTICE OF PUBLIC HEARING

In the matter of deleting D & C Orange No. 5, D & C Orange No. 6, D & C Orange No. 7, D & C Orange No. 17, D & C Red No. 8, D & C Red No. 9, D & C Red No. 10, D & C Red No. 11, D & C Red No. 12, D & C Red No. 13, D & C Red No. 19, D & C Red No. 20, D & C Red No. 33, D & C Red No. 37, D & C Yellow No. 7, D & C Yellow No. 8, and D & C Yellow No. 9 from the list of coal-tar colors subject to certification and adding to the list of colors certifiable for external use only all the colors named except D & C Orange No. 6, D & C Orange No. 7, D & C Red No. 20, and D & C Yellow No. 9:

Objections were filed to the final order in the above-identified matter published in the Federal Register of October 6, 1959 (24 F.R. 8065) by the Toilet Goods Association, Inc.; Revlon; Smith, Kline, and French Laboratories; The Pharmaceutical Manufacturers Association; Ansbacher-Siegle Corporation; Richard Hudnut; and the Certified Color Industry Committee.

The Commissioner of Food and Drugs has concluded that these objections state reasonable grounds for a hearing on two issues:

1. Whether the subacute toxicity studies conducted in the laboratories of the Food and Drug Administration, and reported to all interested persons in February 1959, were properly planned and executed to establish that the seven colors tested (D & C Orange No. 5, D & C Orange No. 17, D & C Red No. 9, D & C Red No. 10, D & C Red No. 19, D & C Red No. 33, and D & C Yellow No. 7) are not harmless colors.

2. Whether it is scientifically sound to delete the 10 colors not tested, because of their chemical relationship to the tested colors D & C Orange Nos. 6 and 7 related to D & C Orange No. 5), D & C Red No. 8 (related to D & C Red No. 9), D & C Red Nos. 11, 12, and 13 (related to D & C Red No. 10), D & C Red Nos. 20 and 37 (related to D & C Red No. 19), and D & C Yellow Nos. 8 and 9 (related to D & C Yellow No. 7).

On the latter issue the Commissioner has concluded that the chemical relationship of D & C Red No. 11, D & C Red No. 12, and D & C Red No. 13 to D & C Red No. 10 is not adequate to warrant the application of the subacute toxicity study on D & C Red No. 10 to the other three colors. Therefore, the delisting of those colors is revoked, and they are restored to the D & C list pending further

scientific studies of them. The final order of October 6, 1959 (24 F.R. 8065) is stayed as to all other colors, pending the outcome of the hearing.

Notice is hereby given, pursuant to the authority of the Federal Food, Drug, and Cosmetic Act (secs. 504, 604, 701, 52 Stat. 1052, 1055, as amended 70 Stat. 919, 72 Stat. 948; 21 U.S.C. 354, 364, 371), vested in the Secretary of Health, Education, and Welfare, and delegated to the Commissioner of Food and Drugs (22 F.R. 1045, 23 F.R. 9500), that a public hearing will be held on the above issues.

The hearing will begin at 10:00 o'clock in the morning of February 17, 1960, in Room 5051, Health, Education, and Welfare Building, 330 Independence Avenue SW., Washington 25, D.C., and will continue thereafter at such times and places as directed by the presiding officer. All persons interested are invited to attend the hearing and present evidence. The hearing will be conducted in accordance with the rules of practice provided therefor. A prehearing conference for the simplification of the issues, exchange of documentary evidence, the scheduling of witnesses, and such other matters as may aid in the disposition of the proceeding will be held in Room 5542, Health, Education, and Welfare Building, beginning at 10:00 in the morning of February 15, 1960. If necessary, the prehearing conference will be continued on the following day. All interested persons who will attend the hearing are urged to appear or to send a representative. Any interested person intending to introduce documentary evidence at the hearing is requested to bring five copies of such documentary evidence to the prehearing conference or to send five copies to the presiding officer in advance of the conference. Only those persons expecting to actively participate at the hearing should attend the prehearing conference. All persons expecting to attend the prehearing conference should notify the presiding officer in advance.

Evidence will be restricted to testimony and exhibits relevant to the issues hereinbefore listed. Mr. William J. Risteau, Room 5440, Health, Education, and Welfare Building, is hereby designated as presiding officer to conduct the hearing, with full authority to administer oaths and affirmations and do all other things appropriate to the conduct of the hearing. The presiding officer is required to certify the entire record of the proceeding to the Commissioner of Food and Drugs for action on the proposal.

The revocation and staying order contained in the sixth literary paragraph of this document shall be effective February 1, 1960.

(Sec. 701, 52 Stat. 1055, as amended; 21 U.S.C. 371)

Dated: January 29, 1960.

GEO. P. LARRICK,
Commissioner of Food and Drugs.

The CHAIRMAN. Our next witness is Mr. Arthur T. Schramm, of the Certified Color Industry Committee.

Will you identify yourself for the record, please?

STATEMENT OF ARTHUR T. SCHRAMM, REPRESENTING THE CERTIFIED COLOR INDUSTRY COMMITTEE; ACCOMPANIED BY JOHN H. PICKERING AND THOMAS BARR

Mr. SCHRAMM. Mr. Chairman and members of the committee my name is Arthur T. Schramm. I am a graduate chemist and have been closely connected with the production and testing of certified coal-tar colors for more than 20 years.

I was one of the U.S. delegates to the United Nations World Health Organization Food and Agricultural Organization Conference in Rome last November on the subject of food color additives.

Since 1956, I have served as chairman of the Certified Color Industry Committee, whose members produce more than 90 percent of the Nation's certified coal-tar colors. Those members are: Allied Chemical Corp.; Bates Chemical Co., Inc.; Dyestuffs & Chemicals, Inc.; H. Kohnstamm & Co., Inc.; Wm. J. Strange & Co.; Sterwin Chemicals, Inc.; Warner-Jenkinson Manufacturing Co.

First, I would like to thank you, Mr. Chairman, and your committee on behalf of the Certified Color Industry Committee for the opportunity to testify in support of this urgently needed legislation to continue protection of the public health by amending the Federal Food, Drug and Cosmetic Act. Our committee has been very active for the past few years in support of such legislation.

Before discussing the proposed legislation, I should like to review, briefly, some historical background. As I am sure you are all aware, coloring of food has been practiced for centuries, the coloring matter used initially having been derived from natural sources. The discovery of dye synthesis in 1856 led to the production of synthetic dyes, which were demonstrated to be superior in uniformity, tinctorial value, and application properties.

After passage of the Federal Food and Drug Act of 1906, by administrative regulation, a list of 7, later 18, coal-tar colors of recognized safety and purity was established. Under that program industry voluntarily submitted to the Secretary of Agriculture samples of batches of the colors for approval, or certification.

Certification, the Federal seal of approval, involved a determination that the submitted sample of color was in conformity with established specifications. Certification was felt to be necessary because of the chemical complexity of the food colors which could have led to nonuniformity in the manufacturing process.

Since that program of voluntary submission and testing proved so successful, Congress adopted it in 1938 and made it mandatory for all coal tar colors used in food, drugs, and cosmetics. The Federal Food, Drug, and Cosmetic Act of 1938 authorized the Secretary to promulgate regulations for the listing and certification of harmless coal tar colors and prohibited the addition to food of uncertified coal tar color. Those provisions are still in effect.

Thus, since 1906 on a voluntary basis, and since 1938 by statute, coal tar colors have been elaborately regulated by the Federal Government.

As you know, Mr. Chairman, the Food Additives Amendment of 1958 dealt for the first time with the general question of food additives, but, since coal tar colors were governed by existing law, the food additives legislation omitted that special class of additives from its coverage. This was done by excluding from the Food Additives Amendment

> any substance used in accordance with a sanction or approval granted prior to the enactment of this paragraph pursuant to this Act * * *

That had the effect of excluding coal tar colors, use of which is sanctioned under section 406(b).

Regulations established under section 406(b) include, as conditions for addition of a new color to the permitted list, requirements that are similar to those that became necessary in 1958 for approval of a food additive.

I might point out, to elaborate a little bit, those requirements required pretesting of the material on animals.

Sections 504 and 604 of the 1938 act also give the Secretary authority over coal tar colors to be used in drugs and cosmetics, which, of course, are not included under the food additives amendment.

During the past 9 years, while Congress has been considering the whole problem of additives in food, the FDA has been issuing orders

limiting the use of various coal tar colors. Some colors theretofore listed as "harmless and suitable for use" in food, drugs and cosmetics, including lipsticks, have by those orders been limited to external application, only. Lipstick is not considered as an external application by FDA. All the colors so limited which had been listed under section 406(b) for use in food had been so listed after presentation of extensive testing data, including lengthy animal feeding studies to evaluate their potential for chronic toxicity, under specifications which precisely controlled the colors' composition.

However, the FDA, in effect, redefined the word "harmless" in section 406(b) to mean incapable of producing any harm in any quantity under any circumstances. Therefore, in support of those orders, new animal feeding studies had been conducted using quantities of color far in excess of, and admittedly unrelated to, amounts ingested by human beings.

After extensive litigation, the U.S. Supreme Court confirmed the FDA's view on December 15, 1958, in the case of *Flemming* v. *Florida Citrus Exchange*. Neither FDA nor industry nor independent scientific opinion regarded that absolutist interpretation of the word "harmless" as scientifically sound. Nevertheless, pursuant to a view which was thought to be required by statute, FDA proceeded to delist 24 colors, including those used to color oranges, butter, margarine, lipstick, and other products.

Realizing that further implementation of the new interpretation would lead to delisting of practically all colors, a result it did not desire, the Department of Health, Education, and Welfare proposed remedial legislation in 1959. As a result H.R. 7624 and S. 2197 were introduced. S. 2197 was passed by the Senate last year.

If remedial legislation is not forthcoming in this session of Congress, it is likely that the public will soon be without color that is essential for much of the food, drugs, and cosmetics now in use. Hence, the Certified Color Industry Committee has worked closely with the Department to expedite this much needed legislation.

Initially, our committee supported H.R. 8945 introduced in the House of Representatives by Representative Curtis of Missouri during the 85th Congress. In subsequent meetings between representatives of various industries and Government personnel, most of the differences between that bill and the present legislation were resolved

Our committee has given careful consideration to both H.R. 7624 and S. 2197. With respect to S. 2197, we believe that it is well designed to protect the public health and to accomplish the purpose of authorizing use of suitable safe color additives. The recent hardships occasioned by delistings and threats of delisting can be relieved, without in any way endangering the public health, by giving to the Secretary of Health, Education, and Welfare the authority to establish quantitative limitations on such coloring matter pursuant to the terms of S. 2197.

Of critical importance in determining the desirability of the legistion proposed is the extent to which such legislation gives realistic and adequate protection to the public health. At the outset it must be noted that the bills here under consideration purport to regulate not only the coal tar colors that were excluded from the scope of the food additives amendment but, in addition, all other food color additives, regardless of source.

The regulation of all colors is required because, from the standpoint of determining safety for use, there is no sound scientific basis for distinguishing between colors principally on the basis of their origin.

Moreover, under S. 2197, the Secretary of Health, Education, and Welfare is given the power to determine whether the color additive "under the conditions of use specified in the regulations, will be safe * * *." (Sec. 706(b)(4).)

In making that determination the Secretary must consider:

(1) The probable consumption or other relevant exposure from the additive;

(2) The cumulative effect, if any, of such additive in the diet of man or animals;

(3) Safety factors which, in the opinion of experts, are generally recognized as appropriate for the use of animal experimentation data; and

(4) The availability of needed practicable methods of analysis for determinnig the identity and quantity of the pure dye, of the additive in or on any article of food, drug or cosmetic and of any substance formed in or on such article because of the use of such additive. (Sec. 706(b)(5).)

Those provisions give the Secretary broad discretion to investigate the additives proposed, and to determine whether such color is or is not safe. At the same time, S. 2197 is sufficiently flexible to enable the Secretary to keep pace with advancing scientific knowledge in making the determinations of safety. Thus, the Secretary would be enabled to evaluate both new and existing colors in the light of that knowledge. In addition, the unworkable "harmless" test under the 1938 act would be replaced by a useful test based on reason, current scientific knowledge, and appropriate safeguards.

One of the outstanding features of S. 2197 is that under its provisions the proponent of the use of a color additive accepts the burden of retesting that particular color additive and of establishing its safety under the conditions of its intended use, while under the present act the FDA is obliged to retest the presently listed colors to conform to its redefinition of "harmless." It is worth noting that the cost of testing a food color can run from approximately $75,000 to as much as $250,000.

I would like to point out some misunderstanding that might have arisen from comments that Secretary Flemming made yesterday with respect to the retesting of these colors.

As many of you know, the current law on food colors requires the payment of fees to the Food and Drug Administration for each batch of colors certified. These funds are used to defray the certification expenditures, the laboratory testing personnel cost, and the use of the facilities in the Food and Drug Administration, and have been used, at least in part, to support the pharmacological and toxicological testing program of the Food and Drug Administration, which has been conducted on the colors that we are talking about, the food colors.

Now it was considered inadvisable for industry at the time that additives became a matter of general concern to retest these colors and run identical tests concurrently with the Food and Drug Administration. It may have appeared for this reason that industry is not sufficiently interested in the overall problem, but since the fees

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were being contributed and we were aware of the experimentation that was going on, I felt it appropriate to point that out at this time.

Those figures are particularly significant with respect to an industry which has annual sales of less than $10 million.

Moreover, most of the manufacturers of certified colors are small companies, some of which are in no other business. However, the certified color industry's products are vital to the food, drug, and cosmetic industries and are used in small amounts in many products having great economic value. Almost infinitesimal amounts are used in any particular product.

The committee is likewise in general agreement with H.R. 7624, which is substantially identical with S. 2197, except that the committee has the following suggestions:

(1) In order to eliminate an absolute requirement for analytical methods in circumstances where such a method may not be necessary from the standpoint of safety, there should be substituted, for the language which begins on line 3 of page 9 and ends with line 10 on page 10 of H.R. 7624, the language which appears beginning with line 9 on page 9 and ends with line 20 on page 10 of S. 2197 as passed by the Senate and referred to this committee. This change was worked out by our committee with representatives of the Department of Health, Education, and Welfare and was adopted by the Senate Committee on Labor and Public Welfare as appears from Senate Report 795.

(2) Our committee suggests the elimination from H.R. 7624 of section 706(b)(5)(B). That provision singles out carcinogenic substances and readopts, with respect to such substances, the absolute test sought to be remedied by the proposed legislation.

As pointed out above, S. 2197 gives broad discretion to the Secretary to determine whether a proposed color is safe. Under the terms of S. 2197 the Secretary is authorized to take whatever view of carcinogenicity that the state of scientific knowledge at that time requires. There is absolutely no reason, based on either considerations of public health or scientific knowledge, to abandon the grant of discretion to the Secretary in favor of the absolute prohibition.

Of course, it cannot be said that we of the color industry, by taking this position, favor cancer, any more than it can be said that the Senate, by passing S. 2197 without a cancer provision, is in favor of cancer. The question is not one of being for or against cancer—Lord knows we are all against it. The question instead is how best to deal with the matter from the standpoint of legislation. Here we think that the approach of the Senate is preferable.

The Senate's deliberate omission of a cancer provision avoids an unnecessary, and what we believe to be an unwise, absolute rigid standard, while at the same time it adequately protects the public health. As the Senate Committee on Labor and Public Welfare stated with respect to the cancer amendment to the bill which became the food additives amendment (S. Rept. 2422, 85th Cong., p. 11):

*** * * we would point out that in our opinion it is the intent and purpose of this bill, even without that amendment, to assure our people that nothing shall be added to the foods they eat which can reasonably be expected to produce any type of illness in humans or animals. We applaud Congressman Delaney for having taken this, as he has every other opportunity, to focus our attention on the cancer-producing potentialities of various substances, but we**

want the record to show that in our opinion the bill is aimed at preventing the addition to the food our people eat of any substances the ingestion of which reasonable people would expect to produce not just cancer but any disease or disability.

Mr. Chairman, as this committee knows from the testimony of the panel of scientific experts who appeared before it during the hearings on the food additives legislation, safety is a relative and not an absolute concept, and it is a determination based upon many factors which shift in the ever-growing light of scientific knowledge. In this fluid and expanding field, it can be dangerous and unfortunate to impose rigid, flat legislative standards. We of the color industry are understandably concerned about such absolute legislative standards.

During the past few years we have seen our business needlessly suffer because of an absolute "harmless per se" statutory requirement which all concerned have agreed is scientifically unsound, administratively undesirable, and unnecessary for the protection of the public health.

We have also seen how much time and effort is required to get remedial legislation. It is now almost 6 years since the first delisting action was taken against colors certified for use in food, and we still do not have general relief legislation.

In the light of this historical background we are very disturbed by Secretary Flemming's support yesterday of a flat legislative prohibition against the use of color additives which may be found to induce cancer, and by his suggestion that, if in the future, scientific information should be available to demonstrate a safe level of use for a color found to induce cancer, the precise situation would then be laid before Congress for authorizing legislation to permit that particular safe level of use. In our view this approach is undesirable because:

(1) It freezes the cancer problem to the state of present scientific information without allowing any flexibility for future action in the light of ever-increasing knowledge.

(2) It singles out for special and prohibitory treatment an element, cancer potentiality, which is but one of the many complex factors which bear on the basic test of safety and it really adds nothing to that test.

(3) It would require the Congress to make a scientific judgment in the future. Instead of Congress setting the broad legislative standard of safety and leaving the implementation of that standard to administrative discretion in the light of scientific knowledge existing from time to time, Congress would be called upon sometime in the future to review scientific information and to determine on the basis of that information whether to remove the proposed prohibition against cancer-producing substances. Congress would thus be called upon to make a decision which is essentially the business of the Secretary to make. If this proposition is accepted for carcinogenic manifestations, there is no reason why it should not be accepted for the many other complex elements which have to be considered in determining whether materials are safe for use in foods, drugs, and cosmetics. The result would be that Congress would be called upon to make the judgments that should be made by the Secretary.

(4) The Secretary's proposal could well lead to the same situation in which we find ourselves today—that is, all might be agreed that the

legislative restriction is no longer necessary and should be removed, but meanwhile, the business of the producers and users of colors might be disrupted without any necessity for doing so in the interest of the public health.

For all of these reasons, we favor omitting any cancer provision from the legislation. We would leave it to the Secretary to deal with carcinogenic manifestations, as simply one of the elements to be considered in determining safety. We are confident that his discretion would be employed in the light of the best scientific information available so that the consuming public would be completely protected while at the same time there would be no unnecessary interference with legitimate interests of the producers and users of colors.

However, we can understand why, in view of the current widespread concern about cancer, it may be thought desirable to give to the Secretary some specific directions with respect to carcinogenic manifestations.

Accordingly, we would not object to a provision which did that, so long as it did not fetter the Secretary with a prohibition which future scientific knowledge may show to be as unnecessary and as unworkable as the "harmless per se" requirement which has brought us to these hearings. This could be done by inserting in section 706(b)(5) of S. 2197 a subparagraph (E), as follows:

The present section reads—

> In determining, for the purposes of this section, whether a proposed use of a color additive is safe, the Secretary shall consider, among other relevant factors * * *.

And then to add this language:

> (i) whether the use of a color additive which will or may result in ingestion of all or part of such additive is found to induce cancer when ingested by man or animal; or whether it is found, after tests which are appropriate for the evaluation of the safety of additives for use in food, to induce cancer in man or animal; or
>
> (ii) whether the use of a color additive which will not result in ingestion of any part of such additive, after tests which are appropriate for the evaluation of the safety of additives for such use, or after other relevant exposure of man or animal to such additive, is found to induce cancer in man or animal.

Through that addition to S. 2197 the Secretary could be given specific direction to evaluate every proposed color in terms of any conceivable cancer problem.

S. 2197 is also preferable to our committee because, since it has already passed the Senate, it would be the quickest way to get this legislation, for which there is a pressing need, enacted.

In conclusion I would like to say that, in general, the proposed legislation is well considered and progressive. It enables the Secretary effectively to protect the public health and permits the various industries to continue manufacturing and using safe color additives.

In our opinion, S. 2197 should be recommended by your committee and passed by the House as expeditiously as possible.

There is one additional remark that I would like to make. This is in connection with your suggestion yesterday that a committee of experts be convened; that we in the certified color industry are heartily in accord with that suggestion. We think it is an excellent suggestion and would cooperate to any extent we can to implement it or to assist.

However, in view of the urgency of this legislation, we would implore that this convening of experts be done promptly. However, if it should be decided that our approach to the legislative handling of this cancer problem, that it be left under one of the discretionary orders of the Secretary, the policies of the Secretary, which would lend itself to flexibility and to permit him to evaluate safety in the light of existing knowledge at the time, it may be appropriate to consider assembling such a group after the legislation is enacted.

I just offer this for what it is worth.

Thank you very much.

The CHAIRMAN. Thank you very much for your very good statement on this entire subject. It appears from the experience that you have had with the problem that your presentation is deserving of most careful consideration.

Are there any questions, Mr. Williams?

Mr. WILLIAMS. No questions.

The CHAIRMAN. Mr. Curtin?

Mr. CURTIN. No questions.

The CHAIRMAN. Mr. Brock?

Mr BROCK. No questions.

The CHAIRMAN. Mr. O'Brien?

Mr. O'BRIEN. I want to compliment the witness on his statement and to ask him one question.

Do you have any evidence of any physicians anywhere at any time who have advised their patients to remove lipstick from their diet?

Mr. SCHRAMM. None to my knowledge; no, sir.

Mr. O'BRIEN. If lipstick was a cancer culprit, would there not be a number of women suffering from cancer of the lips, and would that number not be enormously more than in men, even though I understand some men occasionally use lipstick?

Mr. SCHRAMM. I understand that it is also transferred on occasion. [Laughter.]

Mr. O'BRIEN. That is all; that is all.

Mr. SCHRAMM. I cannot speak, sir, as a toxicologist, but none has come to my attention that there is a greater prevalence which might be associated with cancer, but my comments, of course, are those of a layman with respect to that.

Mr. O'BRIEN. Thank you.

The CHAIRMAN. Did you say something about the transfer of it? [Laughter.]

Mr. SCHRAMM. I am in favor of that.

The CHAIRMAN. Mr. Glenn, any questions?

Mr. GLENN. No questions.

The CHAIRMAN. The proposed amendment that you offer to the House bill, on page 10 of your statement, is with reference to the cancer provision. You propose that there be included in the Senate bill, on page 9, as a part of paragraph 5—is that it?

Mr. SCHRAMM. Yes, sir. That would be 5(e).

The CHAIRMAN. You would add another paragraph beginning on page 10, line 21?

Mr. SCHRAMM. That is correct, sir.

The CHAIRMAN. I notice that you have almost identical language.

Mr. SCHRAMM. Yes.

The CHAIRMAN. What would be the difference of transferring it from one place in the proposed bill to another?

Mr. SCHRAMM. Really, under section 5 this becomes one of the several items which the Secretary must consider in determining safety, and it would permit him, in the light of changing knowledge on the subject of safety, on cancer in particular, to change his reference point or requirements without the necessity of taking it through a legislative change which would be a saving of time.

The CHAIRMAN. Would it be correct to say in the proposed language in the House bill as it is now, it specifically provides that a color additive shall not be listed, and so forth and so on, and what you propose is that in determining whether a proposed use of a color additive is safe, the Secretary shall consider, among other things, relevant facts—he shall consider this same language.

As I gather it, the legal import of that is that the Secretary may use his discretion as to whether these things being present it shall be delisted. In the bill, it is mandatory.

Mr. SCHRAMM. Exactly, Mr. Chairman. And in that case——

The CHAIRMAN. In other words, what you do here—I want to get this clear, because this is pretty important to the whole thing is to say that if these conditions are found to exist, the discretion is left to the secretary as to whether or not that shall be lifted?

Mr. SCHRAMM. Exactly. That is right.

The CHAIRMAN. And in the bill, if these conditions are found to exist, then the Congress says that they shall not be listed. The Congress says so instead of the Secretary—that is the difference?

Mr. SCHRAMM. Yes, sir.

The CHAIRMAN. The way the Secretary talked yesterday, I do not think that there would be any difference in the results.

Mr. SCHRAMM. I am sure with the present state of knowledge, the results would be different.

The CHAIRMAN. Some of the Members of Congress—and I am sure that there are a good many of them—would contend, and appropriately so, that it should not be left to the Secretary, but to the Congress.

We may never know just what the position of the next Secretary or the next Congress may be.

Mr. SCHRAMM. From my experience over 20 years with the Food and Drug Administration, and the excellence of the scientific personnel they have, I am sure that a situation of that kind would not be allowed to persist very long.

The CHAIRMAN. This matter that we are talking about is just for clarification.

In the position that the industry takes, they will have to make up their mind whether they want any legislation at all, if this provision is to be included where it is now.

Mr. SCHRAMM. With respect to this specific problem of cancer, which we are all discussing now, we feel that in the Senate bill as it is now worded, the Secretary has implicit authority to terminate the use of anything about which he has that to show that the development of cancer in either man or animal may be possible by considerable testing conditions.

As we pointed out later in our dissertation here, if it is preferable to actually put the words, involving cancer, into the law, we feel that

for expediting it and coping with the rapidly changing science, with the latest scientific knowledge, that the Secretary could then act on the basis of the scientific knowledge existing at that time.

As I recall, Secretary Flemming indicated yesterday that should cancer experts, toxicologists, scientists, at some future date agree that tolerances can be established for carcinogens, that there are measurable threshold quantities under which no harm would likely ensue, that then he would be perfectly willing to establish a tolerance, but with the Delaney clause in the position where it is in the House bill, it would require that he bring this to the attention of the Congress, so that suitable legislation be enacted to permit him to do something that he would be able to do immediately under the requirements that would merely shift it to the other section of the law, the discretionary section.

The CHAIRMAN. I understand that. We are faced with a practical situation. We have had the same problem before.

I know about the difficulties we had before.

Thank you very much for your presentation, gentlemen, and the contribution that you have made to this problem.

Mr. SCHRAMM. Thank you, sir.

The CHAIRMAN. The committee will recess until 2:30 o'clock this afternoon, at which time Mr. Riley, legislative representative of the AFL–CIO will be the first witness.

(Whereupon, at 12:30 p.m., the committee recessed, to reconvene at 2:30 p.m. the same day.)

AFTERNOON SESSION

Mr. ROBERTS (presiding). We will proceed with the hearings. The committee will please be in order.

Our next witness will be Mr. George D. Riley, legislatice representative of the AFL–CIO. We are glad to have you here.

STATEMENT OF GEORGE D. RILEY, LEGISLATIVE REPRESENTATIVE, AFL–CIO, WASHINGTON, D.C.

Mr. RILEY. Mr. Chairman and members, I have a prepared statement which I have submitted to the clerk, and I ask that it be inserted into the record, and then I have a few informal remarks that I want to give, with your indulgence.

Mr. ROBERTS. Without objection, your statement will be made a part of the record at this point, and you may proceed as you desire.

(The prepared statement of Mr. George D. Riley is as follows:)

STATEMENT OF GEORGE D. RILEY, AFL–CIO LEGISLATIVE REPRESENTATIVE, ON H.R. 7624, BEFORE THE HOUSE INTERSTATE AND FOREIGN COMMERCE COMMITTEE, COLOR ADDITIVE AMENDMENTS OF 1959

The AFL–CIO, representing the largest grouping of consumers, offers its views on H.R. 7624, a bill to protect the public health by amending the Federal Food, Drug, and Cosmetic Act. We support the bill as introduced.

We believe that the measure will further strengthen the basic act if approved in its present form. For this reason, we oppose any amendments which will have the effect of delaying the work of the Food and Drug Administration in pursuing its appointed duties.

Inclusion of coal tar colors under the legislation is especially important in our evaluation of the merits of H.R. 7624. The fact that a color on the list

can be used without restriction, we also regard as a vital topic covered in the legislation.

We can well understand the impatience of some processors who feel that they are being hindered to the advantage of some competitor who likewise is determined to "get there first with the most."

As far as consumers are concerned, if there be less haste and urgency and if the American public is to have ample protection, then its welfare is the prime consideration and the first concern ahead of profits.

In this connection, that portion of the statement which was included with this bill at the time it was submitted to the Congress in 1959 is good language and is entitled to reference at this point:

"There is no justification, from the point of view of the public interest, in driving either color manufacturers or food, drug, or cosmetic producers, dependent upon the use of color, out of business where the particular use of color involved is one which can safely be admitted under proper conditions of use (including tolerance limitations and certification requirements) established by this Department.

"Hence, while, as a consumer protection agency, we are concerned first and foremost with the protection of consumer interests, equity to the commercial interests concerned is also a factor in the submission of this proposal. It should, however, be stressed in this connection that we could not agree to a dilution or relaxation of the limitations of the carefully designed transitional provisions of this bill with respect to color additives which have heretofore been in commercial use."

The above quoted language is sufficient to express our own interest in this legislation with reference to the Food and Drug Administration which is primarily a "consumer protection agency." We underscore the further statement that we are, as is the FDA, concerned and foremost with the protection of consumer interest.

I am sure the commercial interests' side of the discussion is sufficiently vocal and strong enough to get maximum protection to which they feel they are entitled.

Of especial concern is our interest in the so-called Delaney provision which occurs on page 10 of the printed version of the bill starting on line 11. This portion of the measure is paramount in our estimation. As will be noted, this safeguard of the American public's well-being was not included in the Senate bill, S. 2197, as passed.

Reviewing the statement of the American Cancer Society, Inc., of July 22, 1957, which is part of the record in your committee on the food additive legislation, I recall that it was stated that cancer claims the lives of a total of more than a quarter of a million American citizens each year. The society further remarked upon the inadequacy of legislation of that time and before the Delaney amendment was part of the enactment.

The Delaney amendment assumes further importance from the fact that it is a built-in feature of the Food Additive Act of 1958. For it to fail of continued inclusion in H.R. 7624 would be to apply this anticancer protection to foods but not to coloring substances. We can see no reason for its applicability in one field and not others.

We also ask that appeals procedures move through established channels and not by the de novo process. The tried and true Administrative Practices Act and recourse to the record rather than moving into the courts on a completely fresh basis will assure uniformity and will be clearly in the direction of the American process.

It would appear to be a mistake so long as the whole burden of proof is upon Government to lay down the ground rules against the use of poisons or potential poisons and then permit industry to tie up the administrative machinery in a legal morass for 2 years and meanwhile be permitted to use the substance which is suspect. A lot of persons can be started down the road to earlier death through that means, commonsense certainly suggests.

Profits must not be permitted to have precedence over consumer interest. Be it remembered that every consumer less, also can injure profits just as surely.

As we examine this bill and its provisions, we conclude that all colors now listed typically were included before present modern methods were devised. In this regard, the legislation would seem to divide the responsibility for compiling and maintaining the list between the Government and industry.

It further would seem that industry should welcome this opportunity to share a responsibility in constructively listing the colors which are cleared for use.

We regard retention of the Delaney amendment as probably the heart of the bill. There are those who would say that this amendment is rigid and harsh. We have supported this provision in the past and now renew that support. And if it be harsh, it is harsh on the side of right and provides a periphery of defense against all who wittingly or otherwise would allow the human system to be subject to dire jeopardy.

We cannot urge too strongly that no modification of the Delaney proviso be considered or tolerated.

The bill principally provides these points:

(1) Allows Food and Drug Administration to establish tolerances for the amount of color permitted and further to specify those products in which it may be used.

(2) Industry will be required to prove its use of a color as safe.

(3) A listing of any color for use which would promote deception of the customer is forbidden.

(4) Use of any color causing cancer in man or animal is forbidden and differentiation is drawn between external and internal uses.

(5) Where desirable the Government is permitted to test and to certify individual lots of all color additives.

(6) The new color regulations are extended to colors extracted from vegetable and other natural sources as well as to coal tar dyes.

Color additives other than coal tar products now are under the new food additive amendment. There may have been informal discussions in some quarters on setting tolerances for coal tar derivatives. It is not easy to endorse such proposal for the simple reason that if such dyes are to be regarded as deleterious in large doses, certainly proportionately they must be looked upon as having a similar effect in small doses, though in reduced proportion.

The human system is an intricate chemistry plant. The fact that certain ailments, afflictions, and diseases, including cancer, continue to be great mysteries even to our most advanced and learned experts is sufficient demonstration that we can scarcely be warranted in condoning any components in any quantity large or small so long as they cannot pass the pretesting stage of the animal in the laboratory. One person's tolerance may well be low, another's high. Certainly, the Congress will not wish to attempt the task of setting tolerance against toxic matter for individuals.

Opportunity is taken on this occasion to commend the work of the Food and Drug Administration and Secretary Flemming for the forthright manner in which the Department and the bureau have acted, clearly consistent, in our viewpoint, with provisions of law in the field of food and color additives. They have carried on for the protection of the rights of all parties concerned, in our estimation.

We find no reason or purpose in weakening the law. This is the reason for our support of the bill as introduced.

It must be borne in mind that consumers have absolutely no control over the substances which go into their digestive systems.

The proposal has been made that a committee or panel of scientists discuss the virtues of this legislation. This approach can have its good points as well as points to the contrary. It will enable scientists who are friendly to the consumer to speak up.

In any event, we ask that a color additive bill be not permitted to form the groundwork for changing basic law. There will be plenty of battles to wage beyond the present stage, even with H.R. 7624 approved as written.

The recent situation created through the induction of pellets into poultry whose heads and necks later were found to affect mink is sufficient in itself to prove the justification for our statements in this regard. It is a sad commentary that when the welfare of minks is at stake, then we take another look at what goes into poultry as a second thought in its relationship to human consumption.

We conclude our case by calling for the bill to be reported in substantially its present form and with the suggestion that your committee will be doing a signal service in so reporting the bill.

Mr. RILEY. My name is George D. Riley and I am legislative representative of the AFL–CIO.

We favor the bill as introduced, in hopes that it will be reported in substantially the original form.

Mr. Avery yesterday wanted to know what consumer interests were represented here. We can respond by saying that we are the most numerous block of consumers, and as such we are actively concerned with what is being induced into the human systems of our members and their families.

We are definitely opposed to the use of any compound or colors which are not proved to be anticancer engendering.

The discussion of tolerances and tolerance dosages of cancer suspect substances is completely unimpressive, in our viewpoint. We do not believe that there can be any tolerance of cancer or its causes.

For that reason we consider the Delaney-Sullivan provision, which went into the Food Additives Act and which is in the present bill before your committee, the House bill, and which was eliminated from the Senate bill, S. 2197, is the heart of this proposed legislation.

As on other occasions, we are for the Delaney-Sullivan amendment as a minimum safeguard for you and us as consumers. We desire to call attention to that.

We oppose the Senate bill as offering not any more than a lessening of the present law, and which Senate amendments we regard as industry amendments. We ask that S. 2197 be ignored in its entirety.

H.R. 7624 seems to offer a working partnership to industry. We hope that industry takes due note of that, and takes the opportunity which I feel this bill is offering them as copartners in preserving their industry, the industry of feeding American citizens now and in the future generations.

We oppose any suggestion which can have as its results legalistic delays on a de novo basis, at the same time permitting continuing use of additives reposing under chemical clouds.

We remark that a breakthrough here means an effort to vitiate similar concepts in the food additive bill, and even if it did not, we then would have the situation of having it in one act and not in the other.

The urgency expressed by industry we feel is not the urgency of the consumer. If there be urgency, it must be better demonstrated as being in behalf of the human stomachs than the testimony that I have heard thus far on the part of the representatives of the dye or coloring industry.

We also oppose putting the anticancer rider on a permissive or discretionary basis.

In talking to Secretary Flemming the other day, I said substantially the same thing as the chairman said this morning, in opposing his discretion, the right to use the substance or not when it is suspect, we do so because we do not know who his successor will be and how long he will be around. We have faith in the present Secretary, but we do not know that the next one will be one that we will have faith in, who he will be. And that kind of discretion we do not think that the Congress should grant to any official, no matter who he may be.

We are not ready to settle for half a loaf in that regard, believe me.

Mr. Chairman, that is about the extent of my remarks, unless there are any questions that I will be responsive to, if I can answer them.

Mr. ROBERTS. Thank you, Mr. Riley.

I take it that it is the position of the AFL–CIO to heartily endorse the Delaney-Sullivan amendments?

Mr. RILEY. Yes, sir.

Mr. ROBERTS. And you feel that this legislation contained in the House bill goes far enough at this time—or do you think that we ought to explore the possibility of expanding the coverage?

Mr. RILEY. I do not feel expert enough in that regard, Mr. Chairman. If expansion and extension is indicated, then we would be for that, too. We do not think that there is any measure of compromise in dealing with the health and well-being of our people.

If it needs to be tightened up, we are for that, too. We are for just a lot of safety to the human system.

It so happens that we are fighting this sort of situation on some three fronts at the present time.

We have a lot of foul air around these days, air contamination, air pollution. Your committee last year, I believe, sent a bill to the President which was signed on continuing a study of the causes and effects of air pollution.

We supported that. We also are supporting at the present time legislation to limit water pollution.

We just believe in clean air, food, and water all around.

I think that we had the privilege of originating the poultry inspection bill which has gone a long way toward cleaning up that industry. I remember that the representatives of that industry came in with folded arms and stony faces and refused to do or say anything to promote that legislation. Before the fight was over—and it was, in a couple of years—industry got on the ball. They were one of the most ardent supporters of that legislation.

I hope that that type of reception and perception and intelligence takes hold in this situation, and that you will get active participation on the part of industry, because if we are going to poison consumers by attrition, it seems to me that industry is going to take its share of the loss as well.

Mr. ROBERTS. I remember very well the facts of the controversy you speak of. I think it has been one of the finest things that ever happened, so far as the demand for poultry products is concerned.

It has been my feeling that perhaps a panel of scientists and technical people that the chairman spoke about, and you referred to in your statement, might very well go into this proposition and find out whether or not we should tighten up this bill.

Mr. RILEY. Yes, sir.

Mr. ROBERTS. Would you go along with the idea that such a panel, following the hearings on these bills, might be a good thing?

Mr. RILEY. I believe that is included in the statement, Mr. Chairman, the remark that we would certainly endorse that idea, because if for no better reason than it will enable all sides to be presented for the information of the committee, and there would be a ventilation of ideas in the discussion in this very important area.

I can find no difficulty in having experts tell us what is right and what is wrong.

Mr. ROBERTS. Thank you, Mr. Riley.

Are there any questions, Mr. Glenn?

Mr. GLENN. No questions.

Mr. ROBERTS. Mr. Brock?

Mr. BROCK. No questions.

Mr. ROBERTS. Mr. Rhodes?

Mr. RHODES. No questions.

Mr. ROBERTS. Let me say again that we are very glad to have had you here.

Mr. RILEY. One thing more. May I remark upon the present chairman's efforts in this field? I believe that you chaired the Subcommittee on Air Pollution, if I am not mistaken.

Mr. ROBERTS. Yes.

Mr. RILEY. I want to remark that you came through with a wonderful bill, and I also want to thank the committee for this opportunity of presenting our case, which case was not received by the Senate committee. I am sure that the deliberation over here will have a great deal of wholesome effect.

Mr. ROBERTS. I appreciate that very much. We always are glad to have you here.

Our next witness is Mr. Harold Edwards, vice president of the National Health Federation.

STATEMENT OF HAROLD EDWARDS, VICE PRESIDENT, NATIONAL HEALTH FEDERATION

Mr. EDWARDS. Mr. Chairman and gentlemen of the committee, I am Harold Edwards, vice president of the National Health Federation, which is primarily a layman organization. We have, perhaps, a brief history of only about 5 years, but I think that we represent the outgrowth of many years of effort in many of the combining efforts of many laymen organizations throughout the country who have become increasingly interested in this overall problem of pure air, pure food, pure water, beverages, and so forth.

We believe the Food and Drug Division under the administration of Secretary Arthur Flemming is earnestly striving for adequate control of color safety in foods and cosmetics. We further believe that over the recent past the Division has made significant advancements in testing and evaluation methods. There is no questioning of the competence and diligence employed.

The food additives hearings of 1958 have left many with the impression that we are still a long way off, however, from dependable accurate tests that compensate for the variables encountered.

A procedure that has been found dependable on one coal tar product seemingly isn't workable with another.

The International Union Against Cancer at Sao Paulo in 1954 stated thusly, that—

> substances with reversible toxicological actions must be judged differently from those with irreversible (e.g., carcinogenic) actions. For substances producing reversible toxic effects, "threshold doses" can be laid down, so that concentrations with a satisfactory safety margin can be regarded as harmless. With substances producing irreversible effects * * * very small doses must be considered dangerous. No substance which in tests at any dose level induce any type of malignant tumor in any species of animal can be considered innocuous to human health.

It should be recognized that public awareness of the dangers to health is at a high crest and likely will continue so or even increase unless adequate steps are taken that will begin to restore confidence. There is one best way to do this, in our opinion, and that is to demonstrate the degree of testing improvements that have been developed

since the 1957–58 hearings brought the cancer clause into public consciousness.

Qualified experts, at that time, testified to the unusual dangers from varying usages of carcinogen bearing materials. Infinitesimal amounts were said to be more harmful when taken repeatedly over long periods than when induced in one single, large dose.

The aura of mystery and the realm of the unknown still seem to apply here. No one agency has spoken convincingly as to how much or how little an animal can be exposed before there is a take.

Evidence has not been produced to show accumulated data on other variants. Very little seems to be known, for example, about effects on animals by type and by sex, especially in the use of the hormonal products. A lot of mystery prevails in the awakening human consciousness as to why cancer has become so great a topic while so little information is in evidence as to its cause and its safeguards.

So the public is assuming we still have a long way to go and information on safety factors does not seem to have been too convincing.

We have no point of disagreement with the forthright manner of approach to the proposed color legislation employed by Secretary Flemming. It seems to us no one could do more to speak clearly and unequivocally as to the kind of color control measures the Division is seeking.

If it could be demonstrated that the insidious effects of tiny amounts of a carcinogen in food could be, in some way, circumvented, that could win friends for the present proposition. If positive evidence is producible that the irreversible effects will not continue to haunt, to undermine with fear, succeeding generations of trusting Americans, that proof must be broadcast.

There is no point of argument with those business firms who show a sincere desire to manufacture and market wholesome, harmless products. This society is heartily in favor of that caliber of enterprise. We will do everything possible to encourage them and more like them.

Powerful pressures being exerted to make the Senate version of the bill, S. 2197, into law would be forcing a step backward toward the dark ages of reckless, irresponsible contamination of a nation's food.

Let us continue along the more constructive road to sounder testing methods, rigid controls, and safer foods. By proceeding in that direction this great legislative body will continue to bring down great volumes of praise on its commendable actions in behalf of better health.

We believe the House bill, H.R. 7624, has merit with its protection afforded in the cancer clause.

From there, let us go on from this lengthy consideration of the evils of cancer and focus long-needed attention on those greater destroyers—heart disease with its 16 million victims, mental and epilepsy with their 17½ million, arthritis with 11 million.

The total of 135 million degenerative disease victims in this Nation has become almost beyond ordinary comprehension.

In conclusion, the National Health Federation recommends:

1. That the Delaney amendment in its original form be included in any law having to do with color additives.

2. That Secretary Flemming's suggested amendments be included in such legislation.

3. That if, in the considered judgment of the Congress, it is thought best to give the Secretary the right to set tolerances, then the manufacturer must furnish acceptable scientific and clinical proof that the tolerance requested will not cause injury to man or animal * * * such evidence to be substantive enough to convince Food and Drug scientists beyond a reasonable doubt.

Mr. ROBERTS. Thank you, Mr. Edwards.

I take it from your statement that you, too, are for the Delaney-Sullivan amendments, and think that they should be included in any legislation for color additives?

Mr. EDWARDS. Yes.

Mr. ROBERTS. Do you feel that these hearings or these considerations should be broadened so as to include material other than color additives that might be carcinogenic?

Mr. EDWARDS. Yes; we do feel very strongly on that point.

Mr. ROBERTS. There was a time when we used the biological approach to the many enemies that we have in plant life. Today the sentiment seems to be that we try to find a chemical poison of some kind to take care of almost anything that will be harmful to existing crops or plants or whatever the materials are that are grown.

Do you think that this committee might well look into the matter of that phase, that sort of proposition, in considering this legislation?

Mr. EDWARDS. As it affects the food supply and the water supply and beverages and so forth, as exemplified in the stilbestrol and cranberry publicity; yes.

Mr. ROBERTS. It might very well be that we would find some conflict with Agriculture in some of these matters, but certainly I think that if we are trying to take care of the human family, with reference to certain types of pests and so forth, it might be well to go into that.

Are there any questions, Mr. Glenn?

Mr. GLENN. No questions.

Mr. ROBERTS. Mr. Rhodes?

Mr. RHODES. No questions.

Mr. ROBERTS. Mr. Brock?

Mr. BROCK. No questions.

Mr. ROBERTS. Are there any more written statements, Mr. Clerk?

Mr. WILLIAMSON. No, Mr. Chairman; not this afternoon.

Mr. ROBERTS. That will conclude the hearing for today, and the committee will stand in recess until Friday at 10 a.m.

(Whereupon, at 3:45 p.m., the committee recessed, to reconvene at 10 a.m., Friday, January 28, 1960.)

COLOR ADDITIVES

FRIDAY, JANUARY 29, 1960

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The committee met, pursuant to recess, at 10 a.m., in room 1334, New House Office Building, Hon. Oren Harris (chairman of the committee) presiding.

Present: Representatives Harris, Williams, Moss, Dingell, Rogers (Florida), Brock, and Springer.

Also present: Representative Haley.

The CHAIRMAN. The committee will come to order.

We observe our colleague from Florida, Mr. Haley, is present today, and we all, of course, know of his interest in this type of legislation. He sponsored legislation to permit the temporary listing and certification of citrus red No. 2 for coloring mature oranges which has passed the Congress last year.

As I understand it, Mr. Haley, you would desire to wait until the 10th of February to present your statement?

Mr. HALEY. If I may have that privilege, Mr. Chairman. Of course, you know my interest in this legislation.

The CHAIRMAN. Yes.

Mr. HALEY. I have testified, I believe, twice before on similar legislation, and if I could have permission to testify a little later, I would appreciate it.

The CHAIRMAN. Surely. You may do so, and I may say we appreciate the assistance you have given us on this very complicated problem.

The first witness this morning will be Mrs. Ann Booras.

Will you identify yourself for the record, Mrs. Booras.

STATEMENT OF ANN BOORAS, PRESIDENT, FEDERATION OF HOMEMAKERS

Mrs. BOORAS. I will. In talking with women, I find that many of them are under the impression that it is their Congress who is looking after their interest, so they feel very secure in that. On the other hand, I will say we are here to represent the Federation of Homemakers, and the consumer at large.

Mr. Chairman and members of the committee, I am Ann Booras, president of the Federation of Homemakers. Our federation is most appreciative of being afforded this opportunity to express the views of its membership with respect to proposed legislation dealing with use of colors in foods and cosmetics.

Our Federation of Homemakers, although but recently formed, consists of housewives residing in this area and in many of our States. We also have junior members attending local colleges. Our members are concerned not solely with the health and well-being of our own families, but with the good health of all consumers.

One of the objectives of our federation is to acquaint our members with past and future food legislation and the tasks and needs of the Food and Drug Administration in enforcing these specific laws.

We wish to thank the members of this committee for presenting to Congress recently an excellent food additives bill which includes the Delaney cancer clause. In our opinion, consumers should be most grateful for the protection now being afforded them through the enforcement of the Delaney cancer clause to the food additives amendment.

Some of our members have read the 1957–58 printed report of the hearings relative to proposed chemical additives bills held before the Subcommittee on Health and Science of this committee, and are impressed with the testimony of reputable doctors and scientists contained therein. From time to time we shall quote from this remarkable report portions of the testimony given by these eminent and highly respected authorities.

It is fortunate for consumers that this committee has a wealth of information obtained from numerous hearings on chemical additives. We feel confident that this committee will deliberate unhurriedly and will present a color additives bill to the Congress which will decrease the risks consumers may now be unknowingly taking by ingesting certain suspect dyes in their foods. We urge that any color additives bill presented to the Congress contain the Delaney cancer clause.

We note that the American Cancer Society in a letter dated July 22, 1957, written by James S. Adams, chairman, legislative committee, to Chairman John Bell Williams, relative to proposed chemical additives bills recommends:

> That no substance shall be approved found to induce cancer in man, or after tests provided in No. 1 above, found to induce cancer in animals.

In this same letter Mr. Adams states:

> The problem is one in which the individual citizen is powerless to protect his own health but must depend upon the Food and Drug Administration.

Mr. Adams also believes, and we continue to quote:

> In considering the health problem created by the increasing use of chemical additives in food, the adage "an ounce of prevention is worth a pound of cure" is particularly applicable.

Mr. Adams then urged:

> That your committee recommend legislation to the Congress to strengthen the Food and Drug Administration.

This advice, in our opinion, can be applied also to the proposed color additives legislation.

Quite a few of our local members were present for Secretary Flemming's appearance at the morning session of the color hearings and were tremendously impressed with his statement to the committee. We are all agreed that consumers will benefit from his forceful presentation of the objectives of the Administration's color additives

bill. The members present at the morning session applauded the Secretary's summary on page 24 of his statement, particularly No. 3 which we quote here as it expresses the opinion of those members attending the hearings:

3. We have concluded that such an anticancer clause constitutes sound public policy in view of the fact that no one knows how much or how little of a substance will induce cancer when added to the diet of man if it has been demonstrated that it will induce cancer when added to the diet of a test animal.

In other words, if a person includes in his diet substances that induce cancer when included in the diet of test animals, he is taking an unnecessary risk. The Government has a responsibility to see to it that we are not exposed to unnecessary risks of this character. In discharging such a responsibility the Government can conceivably contribute to a reduction in the mounting number of cancer cases.

We wish to remind this committee that in 1939 American housewives, through their various organizations and clubs, went on record at hearings conducted by the Federal Security Agency that they wished only colors certified as absolutely safe used in their foods and for decorating such foods. These same housewives in 1939 went on record that they preferred to have the colors of their lipsticks and other cosmetics limited to a relatively few harmless shades than have a variety of hues provided by suspect or proven dangerous dyes.

If today's housewives were consulted about this problem of colors, our federation feels confident they, too, would go on record as wishing safety of the product to be paramount. Now that we are accustomed to the brightness which lipsticks give to our faces and the lift to our spirits, we would be loath to forgo our addiction to them, but we do plead that only the most benign dyes be selected.

Members of our sex start using lipsticks these days at age 12 or thereabouts and continue their use till we depart this existence. Because of such universal and continual use of lipsticks by all ages of our female population, cumulative effects of the dyes must be seriously considered. It must also be recognized that lipsticks are being used by young persons whose cells are still dividing rapidly. Such dyes may have a different effect on these young persons than mature persons. Lipsticks are also applied by expectant mothers, whose bodies undergo so many drastic changes during the stress and strain of pregnancy. Then consideration of the possible effects upon the elderly who may be taking medication for chronic illnesses is suggested.

Today it seems more necessary than in the past that in the best interests of the users, lipsticks should be limited to a few harmless colors and variations of shades until lengthy tests on laboratory animals assure the wiseness of permitting a wealth of shades and colors.

In the case of food colorings, the very young ingest them as well as the aged and the chronically ill of both sexes. The adolescent and the pregnant and those with allergies—all ingest food colorings—sometimes unknowingly (as in the case of butter).

In these circumstances, surely total impact on the human system should be considered as well as cumulative effect and synergistic action. It is our understanding that competent authorities believe that children because of their immaturity and their state of growing, may be affected by chemical additives and dyes in a different nature than mature persons of mature experimental animals.

Therefore, it was very distressing to learn that the yellow and orange a b and o b dyes now removed from the approved FDA lists were used in many of the favorite foods and snacks of children.

Now when the human system has to cope with air pollution and water pollution as well as the products from atomic fallout, it seems especially needful that discretion and caution should be observed in the choice of dyes to be used in our foods.

We would like to point out here that Dr. Jolliffe, eminent nutritionist and medical authority, has stated in the New York State Medical Journal, September 15, 1955:

> Although in America today, life expectancy at birth is near the best of any civilized country in the world, but at the age of 40, life expectancy is near the bottom.

In support of Secretary Flemming's policy that:

> No one knows how much or how little of a substance will induce cancer when added to the diet of man if it has been demonstrated that it will induce cancer when added to the diet of a test animal.

We quote from the testimony of Dr. Francis E. Ray, research professor and director, Cancer Research Laboratory, University of Florida, Gainesville, Fla., before your committee at the hearings on food additives legislation. Dr. Ray stated:

> There may be a safe dose of some cancer-producing chemicals, but we do know there is no safe dose of certain other cancer-producing chemicals. We do not know everything about cancer-producing chemicals. There, my feeling is, we should be on the safe side. Because we know there is no safe minimum dose for certain cancer-producing chemicals, I think we ought to adopt that rule, at least tentatively, that there is no safe minimum dose * * *.

In considering this important color legislation, we would like to remind the committee that for 25 years Agene was used to mature flour in this country. Then its use for this purpose was discontinued when research on dogs indicated it might be quite harmful to humans. Coumarin was used as a flavoring agent for 75 years before its use, too, was discontinued because it was felt it might have a damaging effect on humans. Subsequent research may prove that many dyes now considered relatively innocuous are capable of causing harm to consumers.

Dr. Ray also pointed out on page 200 of the food additives report:

> I wish to make one other point, too, and that is, our experiments show that the younger the animal is when he is treated wtih cancer, the more certain is the production of cancer. And so, we may be initiating cancer in the children of today by the addition of chemicals, and they are very susceptible to that. We will not know, perhaps, for a generation or two what the effects will be.

At this point we would like to remind the committee that the American Cancer Society in a press release last spring announced that cancer seemed to be getting more prevalent in younger women these days and was definitely more prevalent in children.

Dr. Morton L. Levin in the chemical additives report states that cancer is a "common disease." We quote from his remarks which appear on page 355 of the aforementioned report:

> In the presence of a common disease, of which most cases are of unknown causation, I think you can understand the sensitivity of physicians and public health authorities to the possibility that substances which we do not suspect today may be causative of cancer.

In other words, we cannot rule out the possibility that seemingly innocuous substances, on the basis of general experience, may turn out to be significant for cancer when studied thoroughly.

It would appear from the foregoing quotations that our bodies are old fashioned and do not adapt themselves easily to drastic innovations. It seems to us that simply because it may take years to recognize the damage done to body cells by certain pesticides, additives and dyes, discretion and caution should not be discarded and their use permitted in our foods. It would be a tragedy for a child, initially damaged by a chemical additive at 4 or 5 years of age, to be struck down fatally by cancer at 15 or 16—yet such tragedies may even now be occurring.

Again we wish to thank the members of this committee for granting us this opportunity to convey the opinions of our members.

The CHAIRMAN. Thank you very much, Mrs. Booras, for your statement. There may be some questions by members. Mr. Williams.

Mr. WILLIAMS. I have no questions.

The CHAIRMAN. Mr. Springer.

Mr. SPRINGER. I think it was a very good statement. I have no questions.

The CHAIRMAN. Mr. Dingell.

Mr. DINGELL. Thank you, Mr. Chairman. I want to join my colleagues in commending you for a very fine statement. I hope that you and your organization will continue to take interest in legislation that comes through this and other committees of Congress. You have been and can continue to be very helpful to us in consideration of legislation, giving the views of your members and also the views of American consumers. I think it is very important and I hope you will continue and redouble your efforts in this regard.

Mrs. BOORAS. We are going to strive to do our best. Of course, we want to fan out across the country as fast as we can to get additional members because I do think the women need to be alerted to some of the things that are so prevalent in our food situation today and they are not aware of it.

And I say this again, not to be repetitious, because many of the women still feel that Congress is in position where they are taking complete charge and protecting their health. It is not possible for Congress to do all of these things, and I think we must do our share as well.

Mr. DINGELL. I thoroughly agree with you.

The CHAIRMAN. Mr. Rogers.

Mr. ROGERS of Florida. No questions.

The CHAIRMAN. Mr. Brock.

Mr. BROCK. One question, Mrs. Booras. Were you in the audience the other day when Dr. Lauffer testified regarding the testimony by the Food and Drug Administration when colors were fed to rats in varying amounts? He further testified that they found harmful effects when they got to the 2 percent level, and then in explanation of that, he said 2 percent would amount to 100 lipsticks a day ingested by a woman.

Do you feel then that the very infinitesmal amount that is ingested by a woman in the normal usage of lipsticks would be harmful to that woman?

Mrs. BOORAS. Mr. Brock, may I say this to you: I did hear what was said. I believe, and I believe that many of our members feel the same way, it is not the small amount that is ingested at that one particular time or over a period of time, but from reading various testimonies of scientists, I am not a scientist, so therefore I cannot speak from that score. But I believe that many, many of these color additives and various chemicals which are being used not only in our lipsticks but in our foods today possibly might be cumulative in the system and it is not just that little bit we use today that may be harmful, but because we have had in lipstick, we have in our chemical fertilizers and we have strontium 90 fallout and we have many things we must content with every day.

On the other hand, we are faced with the situation where people are ill, they have various types of medication and various illnesses, and just think what happens to a body when you get a conglomeration of all these chemicals. Nobody can say at this stage, I do not believe, what possibly might be the effect of these chemicals until such time as we have more time to test them, but I say this: that I do not believe that any chemical or any color, any color of any kind, should be used if it does not serve a useful purpose. If it is not there as a food item or for some specific purpose, why use it?

Mr. BROCK. Thank you, Mrs. Booras. That is all, Mr. Chairman.

The CHAIRMAN. Mrs. Booras, thank you very much for your appearance here and for the information you have given before the committee.

The next witness is Hon. J. Hardin Peterson, a well-known figure around this Capitol.

STATEMENT OF J. HARDIN PETERSON, SPECIAL COUNSEL, FLORIDA CITRUS MUTUAL

Mr. PETERSON. Thank, you, Mr. Chairman.

The CHAIRMAN. Mr. Peterson, we are glad to have you again before this committee.

Mr. PETERSON. Thank you.

The CHAIRMAN. Many of us who are here know very well the outstanding services you performed when you were in Congress.

Mr. PETERSON. Thank you, Mr. Chairman.

The CHAIRMAN. We are always glad to have you back with us.

Mr. PETERSON. Thank you, sir, and I appreciate the long friendship and I am familiar with the fine work the chairman of this committee has been doing and the help they have given us in times past.

Mr. ROGERS of Florida. May I just say to the committee that it is a pleasure for me, being from Florida and having had friendship with Mr. Peterson for many years, to also join the chairman in welcoming him to this committee, and to tell those members who might not know, that Mr. Peterson served with great distinction in the Congress for 20 years, and was chairman of the committee which is now the Interior Committee and had a most distinguished career.

Mr. PETERSON. Thank you very much. I appreciate that, and I treasure the friendship of the distinguished gentleman from Florida and his distinguished father with whom I served.

Mr. Chairman, with the permission of the committee, I would like to insert my statement in the record, and then I can summarize and probably save the committee some time because a number of the things which I thought——

The CHAIRMAN. First I think for the record you should identify yourself, Mr. Peterson.

Mr. PETERSON. Yes. My name is J. Hardin Peterson, Post Office Box 111, Lakeland, Fla. I am legislative counsel for the Florida Citrus Mutual, which is a growers cooperative with more than 10,000 members.

But in addition to that, this presentation is made on behalf of what is known as the Florida Conference Group, which embraces all agricultural groups in the State of Florida, many of them doing research in the production, harvesting, and marketing of agricultural products.

The steering committee which authorized this statement is taken from that group and includes the Florida Fruit & Vegetable Association, the Florida Citrus Commission, the Florida Citrus Mutual, the Florida Farm Bureau Federation, and the Florida Packing House Managers' Association.

While primarily we are interested in citrus, yet the organizations cover fruit and vegetable groups as well as fruit, and some of this statement is based on phases relating to vegetables.

In addition to that, some of these organizations are associated with other fruit and vegetable associations, so the statement will cover matters which sometimes do not primarily affect Florida.

In view of the fact that a number of the phases have been covered and will be covered by other witnesses, I ask permission to insert the entire statement in the record, and then I can interpolate and comment on a few and would thus, I think, save the committee some time.

The CHAIRMAN. Very well. We would be glad to include your entire statement in the record.

Mr. PETERSON. Mr. Chairman and gentlemen of the committee: I have suggested a series of amendments, some of which may be clarified already and some of which may be clarified in the course of the further hearings.

We have been greatly concerned with reference to the fact that we do not want the ethylene method classified under two or three other acts. We do not want the ethylene method classified under the Food Additive Act and then under this, and we have the assurance, which I understand now is in the record, that the ethylene method of coloring citrus fruits is not intended to be covered in this act, assurance by the Secretary, as part of the legislative history.

The first amendment will be covered later on by another witness, Mr. Noone, and certain statements may be placed in the record as to that so I will merely call it to the committee's attention and then pass on.

Amendment No. 2 may seem to be rather technical. The word "deception" is, of course, a broad term and we have already had assurance from the Secretary that the coloring of oranges by the use of citrus red No. 2 and the use of ethylene is not deceptive under the act. However, the ethylene method is used in pears, walnuts, and a number of other fruits and that should be cleared up as a processing.

What is deception it is hard to note. We have suggested that we put the word "harmful" in front of that. That, in other words, the deception should be harmful.

The CHAIRMAN. The word what?

Mr. PETERSON. Sir? The word "harmful," harmful deception. Something that is likely to injure somebody. So far as citrus is concerned, we already have the assurance ours is not deceptive because we label it. We only cover the mature fruit, but the general group there thought the word "deceptive" was too broad. Any coloring, some persons might take a position, is deceptive. The use of lipstick, rouge, may be deceptive, and so they thought there should be some qualifying word and they came up with that. Because the capping of strawberries, putting the bigger ones on the top, may be considered deceptive. A number of recognized trade practices might be considered deceptive, and we used the general word but we already have the assurance that the method we use in oranges is not, and I will say this to the committee: If it were not, I would not be here, because I was in the forefront and fought before I came to Congress to see there were no immature fruit came out of Florida.

I prosecuted and I enjoined the shipment and I was in the forefront requiring a maturity standard before fruit was shipped. And then when they started the practice of coloring, those of us in Florida who felt that way insisted that there be a higher standard of maturity before you color. So the fruit that is colored is fruit that has a higher maturity standard than the other.

The CHAIRMAN. Where is that provision in the proposed bill?

Mr. PETERSON. Let me see. On page 10, line 25, after the word "promote." I have got the Senate bill here. I think it is line 25. It is in subsection (e):

> The Secretary shall not list a color additive under this subsection for proposed use if the data before him shows that such proposed use would promote—

and we suggest the word "harmful" there.

As I stated before, so far as our oranges are concerned, the statement of the Secretary has assured us that amendment will not be needed so far as oranges are concerned.

Now, its effect on pears and other fruits, I do not know. We are just afraid of the general word "deception." What is deception?

The CHAIRMAN. Well, I just wondered while we are there and I hope you do not mind these interruptions?

Mr. PETERSON. No.

The CHAIRMAN. I am just wondering what the connotation of such a term could possibly be in some instances where you say "harmful deception."

Mr. PETERSON. It would be something that would be cheating or hurting somebody. The term "deception" of course—of course, a man says this looks real red here, this is highly colored, it is pretty; and we do not know what effect in some fruit—we are just afraid of the general term there. We think there should be some qualifying——

The CHAIRMAN. Would it not be a lot better if it said "promote deception that would be injurious to the health of the consumer"?

Mr. PETERSON. That would be much better.

Mr. WILLIAMS. The term "harmful" is just as broad as the word "deception."

Mr. PETERSEN. Yes.

The CHAIRMAN. They go in two directions.

Mr. PETERSON. Yes. That, the chairman's wording, would be much better.

Mr. DINGELL. Can you conceive of deception to the purchaser that is not harmful?

Mr. PETERSON. I do not know. I do not know what the word "deception" means. It is so broad.

Mr. DINGELL. Mr. Peterson, I assume you are an attorney.

Mr. PETERSON. Yes, sir.

Mr. DINGELL. I assume you have made some study of the food and drug law or you would not be in here recommending amendments.

Mr. PETERSON. That is correct.

Mr. DINGELL. Then would you be able to tell us what the term "deception" means?

Mr. PETERSON. It is a general term.

Mr. DINGELL. Is it not a fact, Mr. Peterson, there is a large body of law, a long series of interpretations of the food and drug law that specifically sets out what the term "deception" is?

Mr. PETERSON. Yes; in one instance and another, that is correct.

Mr. DINGELL. What you are trying to do is to actually modify this long series of court decisions by some new language which will require new litigation, is that correct?

Mr. PETERSON. No, sir. I am trying to clear up the situation.

Mr. DINGELL. Just a minute. I would be a whole lot more comfortable if you would sit down.

Mr. PETERSON. All right, fine.

Mr. DINGELL. Is it not a fact, though, that there is a long series of court cases which tells what "deception" means, a long series of cases?

Mr. PETERSON. Yes, that is correct. In those particular instances.

Mr. DINGELL. It is a word within the food and drug law which is actually a word of art, is it not?

Mr. PETERSON. Yes, sir.

Mr. DINGELL. And you are seeking to have us change the whole theory of the food and drug law by changing and weakening the term "deception," are you not here?

Mr. PETERSON. No, sir, because the other deals with other problems. This is dealing only with the matter of coloring.

Mr. DINGELL. Now, can you tell me of one instance when deception of a purchaser is not harmful to the purchaser?

Mr. PETERSON. Well, we get back then to the general definition of "deception."

Mr. DINGELL. Just tell me one instance when it is not harmful to the purchaser's interest to deceive him or to practice deception on him.

Mr. PETERSON. Well, if he buys and he thinks that particular fruit was colored on the tree and it is not, he says, "Well, I was deceived. I thought that came from the tree."

Mr. DINGELL. You heard the Secretary say that is not deception?

Mr. PETERSON. Yes; that is the reason I prefaced my statement by as far as we are concerned, we were out of it. This statement——

Mr. DINGELL. For all intents and purposes you are not greatly concerned with this amendment?

Mr. PETERSON. No, sir. I prefaced my statement by saying that my statement was prepared before he made that statement.

Mr. DINGELL. Yes.

Mr. PETERSON. And then I wanted to be sure in the legislative history. As far as oranges are concerned, we are out of it.

Mr. DINGELL. You are well protected and you really do not care about this?

Mr. PETERSON. That is right, I do not care greatly about that so far as we are concerned.

Mr. DINGELL. Good.

Mr. PETERSON. But in view of the fact other people said in the group that suggested that wording——

Mr. DINGELL. Of course, you folks would not grow pears in Florida, so you would not worry about that.

Mr. PETERSON. That is right. And that is why I intended to when I made my statement, so far as we are concerned, oranges, it has been cleared in the legislative record.

Mr. DINGELL. Good.

Mr. PETERSON. Because we label them "color added." We require them to be fully matured and have a better standard.

Mr. DINGELL. You market a good orange.

Mr. PETERSON. That is right, it is a good orange and we market it.

Mr. DINGELL. I know that.

Mr. PETERSON. Thank you, sir. But we are out of the woods, as far as this, but in view of the fact other groups sat in this conference, I felt dutybound to pass on to the committee——

Mr. DINGELL. They have complained of it, the peargrowers and applegrowers?

Mr. PETERSON. That is right. The only reason I passed it on and we prefaced it, we are out of the woods, but I felt my statement should be the same because I had not been authorized to withdraw it.

Mr. DINGELL. Yes.

Mr. PETERSON. Thank you very much. I think we all understand it.

Mr. WILLIAMS. Mr. Chairman, I have known the element of deception to be present even in political campaigns.

Mr. PETERSON. That is right. [Laughter.]

Mr. MOSS. Is that harmless or harmful? [Laughter.]

Mr. ROGERS of Florida. Mr. Chairman, may I just make a comment there, too?

The CHAIRMAN. Yes.

Mr. ROGERS of Florida. You know I have seen ads about automobiles that come from Detroit; that may not be harmful. They may show them a little longer to the eye than maybe they actually are when you get out and see them, but I do not think it is really a deception that is harmful because I am going to see that car probably before I buy it.

The CHAIRMAN. I do not know when you start getting in and out of them. [Laughter.]

Mr. ROGERS of Florida. I would say you would try it before you actually would buy it even though you might be attracted to it by the ad.

Mr. DINGELL. I would be the last one to defend any deceptive practice by the automobile industry.

Mr. ROGERS of Florida. But it would not be harmful. I would say probably what they are doing is not harmful.

Mr. PETERSON. In my statement I trace somewhat the use of the two methods of color added, one is the ethylene process, which was developed itself by the Department of Agriculture, and which is under a patent, public patent, and which the Department of Agriculture esti-

mated as early as 1952 it resulted in profits to the grower of about $40 million.

The importance of the fact that the market requires coloring, is borne out by the fact in the Canadian market during the period of time in which the orange 32 had been delisted, red 32, rather had been delisted and before we got the new color listed, our shipments dropped more than half that year, about 13-and-some-odd carloads a year preceding and then went down to 600 and something.

I think this committee is probably familiar by reason of its other hearings, with the requirements and why we have to color. It is particularly with reference to the early fruit. Fruit may be mature and yet green on the tree, because they have not had the cold nights and have not had the cold weather, cold weather will then cause the early oranges to mature. But then peculiarly with reference to the late orange, a Valencia when the cold weather comes may be a real orange, looking fine and then when the spring comes and the Valencia is the late orange, the chlorophyll goes back into the tree for the new leaves and the chlorophyll goes back into the orange itself, and then the orange that was a few weeks previously, dead ripe looking, beautiful, becomes green looking, so a mature Valencia, is greener on the outside and looks less mature on the outside than an immature Valencia. A Valencia that is immature looks riper from the layman's viewpoint than the other. So we have the degreening process with ethylene and then the color added, and this committee about four times has recognized it as an economic necessity, and we have taken every step to see that it is not deceitful and is not fraudulent.

Now, there are other statements, and I will say this, as far as Dr. Larrick is concerned, our relationship with him has been very good. At no time have we ever asked for an appointment with him we did not get. At no time has he ever failed to take time to discuss our problems with us. And when we had the matter of special legislation, he was—he assisted us in getting his records promptly and he has made the statement which was included in the legislative history in the Senate.

So I do not want anything I might say to be critical of him because he has been helpful in many of these things.

In fact, this act is somewhat an expansion, an enlargement of the temporary act which the Congress gave to us for coloring of oranges.

There are two or three other amendments here. There was one we thought that the matter of listing, and it is thrown out more or less for what it is worth, we might, we have got a deemed listing and you have a provisional listing and then you use the word "listing." We thought probably that should have some word "official" or something of that sort before it.

Then in the group which met, they had felt strongly that the general provision with reference to the review of administrative decisions should be strengthened and what we say here is not aimed primarily at Health, Education, and Welfare, but is what we feel should be done with reference to all administrative decisions.

The general rule with reference to review is that substantial evidence is all that is required. When the food additive bill was up, Mr. Willams brought a new conception and strengthened it somewhat in which he required a fair evaluation in this committee report, required a fair evaluation—Mr. Williams, my recollection is, wrote the

report—of the entire record. We have, in our amendment, gone a little further than that and we have suggested that it should be upon the preponderance of substantial probative evidence and a fair evaluation of the entire record.

As I stated before, the rule for review will be spelled out here but we say this and we are not pointing the finger primarily at Health, Education, and Welfare, but we are thinking that that might be a good formula for administrative review generally.

Mr. WILLIAMS. Will you distinguish, Mr. Peterson, between the intent or language in the act, in the Food Act, of the bill last year and the suggested language that you would give us; that is, the word "probative"?

Mr. PETERSON. Yes; I used a little more.

Mr. WILLIAMS. What would be the practical effect of it?

Mr. PETERSON. The practical effect of ours is that it would require a preponderance of evidence, we put in the preponderance of substantial probative evidence, and "probative," of course, means that which is fair for testing or fair for trial, and then deriving from the word which means truthful, and we thought maybe we strengthened yours. We think yours is a decided improvement on the other, and in the groups which met, there were all types of people. Some who——

Mr. WILLIAMS. The point that confuses me is that all evidence is probative; is it not?

Mr. PETERSON. All evidence—if it is truthful; yes.

Mr. WILLIAMS. Well, somebody has to determine that.

Mr. PETERSON. That is right.

Mr. WILLIAMS. Of course, only the truthful evidence is considered.

Mr. PETERSON. That is right. The general definition of that is that by which a thing can be tried or by which a thing can be tested.

We do add to yours the preponderance of substantial evidence and a fair evaluation of the entire record.

We just thought we polished up a little on yours. We think yours was a decided improvement over the other wording, and as I said before, when you get into a group like this, you get all types of suggestions, and it becomes the composite thinking of the group, and some of the people in the group that had a problem with reference to wages and hours, much to my consternation, they say the Wage and Hour Division takes the position that the declaratory judgment statute does not apply to them. So every time you deal with the regulations some people get afraid.

But we feel that there should be legislation of this sort; I think it is vital and necessary. We do not want to throw anything in the way of it. We were trying merely to be helpful and throw out certain suggestions and, as I said, several of the things which I mentioned, the Secretary has already cleared up, and some will be cleared up, I think, by subsequent statements.

I shall be happy to be of such assistance as I can, and the fact that our own problem seems to have been solved, I believe the Secretary said in view of the fact that the new citrus—No 2; I get these numbers mixed up—already the cancer studies had been made and the other studies had been made and he saw no reason for immediate certification, so most of our problems have been cleared up. But we wanted to be helpful as we could in the others and try to give you the benefit of our experience, and I will say to my colleague from Michigan for

whom I served with his father and have a high regard for both of you, I do not have any running fight with Food and Drug, but in the meeting, everybody was afraid of "deception"—what was deception; and, of course, they had assured Senator Holland, and they assured the Congressman the way we do it is not deception and I will say this: If it were, I would not be here, because I defied some of the strongest groups in the State and I prosecuted them and I enjoined them, and Senator Holland, before he was Senator, he and I were the pioneers in getting the maturity legislation requiring shipment of mature oranges and we are policing it.

We have the highest standards of any State in the Union and we are policing it today and we are fearful of the ethylene; we do not want to get into three different acts and, as that develops, I think maybe the Secretary or someone else will be able to clear that up and will have all the data before it concludes.

I thank you very much. I talked a little longer than I figured, but I wanted to be helpful and yet I wanted to be sure to say my say for all the people who had selected me to come here.

The CHAIRMAN. What is your amendment No. 1?

Mr. PETERSON. No. 1 is for the purpose of being sure that insecticides and fungicides are not under the act.

The CHAIRMAN. Yes. But where is it? I do not see anything.

Mr. PETERSON. The ethylene method today, some folks think it might come under the Food Additive Act. We do not. We think that it comes under the Fungicide and Insecticide Act because of the wording of it.

The CHAIRMAN. You do not propose any language here, do you?

Mr. PETERSON. Sir?

The CHAIRMAN. You do not propose any language?

Mr. PETERSON. Yes. I propose language.

The CHAIRMAN. Where is it?

Mr. PETERSON. I propose language there so that to be sure—let me see, No. 1, we put this, after the word "include" in the definition—

it does not not include a pesticide chemical in or on a raw agricultural commodity or a pesticide chemical to the extent that it is intended for use or is used in the production, storage, or transportation of any raw agricultural commodity.

In other words, if it be under the Pesticide Act, we did not want to be under the Color Additive Act, and ethylene; we did not want to get caught under being food additive, color additive, of course, so far as citrus is concerned, that is cleared up, too, and under the three acts and we would be constantly getting exemptions from tolerance or tolerances.

The CHAIRMAN. So we understand the proposed amendments which you explain in your statement are included in an additional statement at the end of your presentation?

Mr. PETERSON. Yes, sir; that is right, sir. That is right. That is right. And No. 1, and Mr. Noone has been doing considerable work on the data with reference to No. 1, and he may address himself to that and he may clear it up, because some people think that the ethylene method, and California will be greatly concerned with ethylene, may come under the food additive. I do not think it does, because the Food Additive Act exempts what would be under insecticides and fungicides.

Mr. DINGELL. Mr. Peterson, I note Mr. Rankin of the Food and Drug Administration is here in the room, and I wonder if you would object if I asked him if there was any possibility of the apprehension you felt would be carried out in later administrative practice?

Mr. PETERSON. Yes; that would be helpful.

Mr. DINGELL. Would you mind commenting on that, Mr. Rankin?

Mr. RANKIN. About the ethylene process and Citrus Red No. 2?

Mr. DINGELL. Yes.

The CHAIRMAN. I think you had better identify yourself for the record if you are going to testify.

Mr. RANKIN. Yes, sir. My name is Winton B. Rankin. I am assistant to the Commissioner, Food and Drug Administration.

We have written Senator Holland, Senator Spessard Holland, a letter about this question that Mr. Peterson has raised, and we have advised him that we do not regard the use of ethylene in the treatment of citrus or the use of Citrus No. 2 on mature oranges as constituting deception, and that is the letter that was referred to when Secretary Flemming testified on the first day of the hearing, Secretary Flemming reaffirmed that statement.

Mr. DINGELL. Would you get us a copy of that for the record, Mr. Rankin.

Mr. RANKIN. Yes, sir, we would.

Mr. DINGELL. You would not have any objection to putting that in the record?

Mr. PETERSON. It is in my statement.

Mr. DINGELL. If that is so, then we do not need to worry about the deception suggestion you were suggesting to us.

Mr. PETERSON. Yes.

Mr. DINGELL. You are to all intents and purposes abandoning that?

Mr. PETERSON. Unless the pear people——

Mr. DINGELL. So far as citrus is concerned, you are satisfied?

Mr. PETERSON. I am satisfied.

Mr. DINGELL. I want to ask Mr. Rankin one question to clarify some of the points you raise here. The amendment No. 1 says:

pesticide chemical in or on a raw agricultural commodity or pesticide chemical to the extent that it is intended for use or is used in the production, storage—

and that language is to be inserted on page 3, line 4, after the word "include."

Do you view that amendment as being necessary, Mr. Rankin, to carry out the purposes that Mr. Peterson has been discussing this morning?

Mr. RANKIN. Mr. Dingell, that question is under study in our department today.

Mr. DINGELL. So you would not want to comment on it at this time?

Mr. RANKIN. If I may, I will withhold comment, but be sure that the committee does get the Department's views on it later.

Mr. DINGELL. I see. That would be very helpful to us, Mr. Rankin, and we would very much appreciate it.

Mr. RANKIN. We will see that we get that to you; yes, sir.

The CHAIRMAN. It would be my purpose to get comments from you, Mr. Rankin, on all of these proposed amendments which have been submitted.

Mr. RANKIN. We will see we bet that to you; yes, sir.

Mr. PETERSON. Mr. Chairman, Mr. Noone, who follows me later, is familiar with that proposed amendment, too, and the Department is studying it, and that is what I meant; we were trying to get before the hearing closes a statement on it. I think probably it will be cleared up. At least it will be cleared up or we know we have grounds to worry about the thing. I believe that is all I have unless the committee has further questions.

We merely wanted to be sure we do not get the insecticide, pesticide, and rodenticide under three things.

The CHAIRMAN. We will either get it cleared up or confuse it more.

Mr. PETERSON. I do not believe with the able lawyers on this committee, you will confuse it. I think you will clear it up.

Thank you very much.

The CHAIRMAN. Does anybody else have any further questions?

Thank you very much, Mr. Peterson.

Mr. PETERSON. Thank you.

Mr. DINGELL. Mr. Chairman, could I ask a few questions? I have been intruding here in the time of my other colleagues, but there are a couple of questions I would like to ask about some of these amendments.

Mr. PETERSON. Yes.

Mr. DINGELL. As you know, I am very much concerned about any weakening amendments in this bill.

Mr. PETERSON. I do not want to weaken the bill, frankly.

Mr. DINGELL. I would like to direct your attention specifically to amendment No. 3, which says—you say in here in your language with regard to amendment No. 3:

> We have attempted to go a little further and yet with not a radical departure—

and what you are saying is that you have attempted to erode very slightly on the validity of the order of the Secretary, is that correct? Am I correct in that, sir?

Mr. PETERSON. Yes, we are going to require a little more—we have tried to require that it be a preponderance of substantial evidence.

Mr. DINGELL. What is the difference between the preponderance of substantial evidence and susbtantial evidence rule as applied under existing law?

Mr. PETERSON. The preponderance would be the most of it. In other words, if there is one person with a good background, that you normally could believe him and he said something, that in itself could be substantial evidence.

Mr. DINGELL. Right.

Mr. PETERSON. I have gone through——

Mr. DINGELL. What would the difference between that and the preponderance of evidence be?

Mr. PETERSON. The preponderance would be the most of it. In other words, if you had two or three people testifying, all of them having about the same background, about the same experience, then you would take what is the preponderance of evidence

Mr. DINGELL. In other words, you just throw everything on the scale, and the side that had the most would prevail; is that right?

Mr. PETERSON. Yes; the most of substantial—it would not be whimsical.

Mr. DINGELL. As opposed to the rule now which requires that all the court has to do to sustain the findings of the Secretary is to find there is substantial evidence to sustain it; is that correct?

Mr. PETERSON. No, sir. You go a little further, a fair evaluation, you go further, a fair evaluation from the whole record.

Mr. DINGELL. That for all intents and purposes, it is the same as substantial evidence?

Mr. PETERSON. Under the Administrative Procedures Act, it is substantial evidence, and in the review—and I am getting into a field I know something about, because I have handled a number of appeals dealing with the construction of substantial evidence, not necessarily in the Department but in the courts themselves. The courts, if you have got one bit of what looks like pretty good testimony, and we do not go any further, that is substantial evidence.

Mr. DINGELL. This is a high degree——

Mr. PETERSON. And they would not even read the full record on occasion.

Mr. DINGELL. Wait. The law here says they have got to read the full record of the case.

Mr. PETERSON. That is correct.

Mr. DINGELL. And this bill as drafted says they have got to read the full record.

Mr. PETERSON. That is correct.

Mr. DINGELL. You are not saying that the courts do not read the full record on these cases under this bill?

Mr. PETERSON. No, sir; they do not as a rule. You make an appendix and they read the appendix that you put there, as a rule.

Mr. DINGELL. Wait. Are you saying the courts are not reading the full record? As I read the food additives law, it says they have got to read the full record. Are you saying the courts are not reading the full record?

Mr. PETERSON. In practice they do not. In practice you put an appendix to your brief, and they read the appendix as a rule. They could not read all the record. In other words, it is physically impossible for the court to read all the records that come up at times.

Mr. DINGELL. What you are actually alleging is wrongdoing on the part of the courts?

Mr. PETERSON. Sir?

Mr. DINGELL. What you are actually alleging is wrongdoing on the part of the courts.

Mr. PETERSON. Well, no, as long as you say "substantial."

Mr. DINGELL. You are saying they are failing to comply with the law.

Mr. PETERSON. No. As long as you use merely the word "substantial," the court can only read the record until he finds substantial evidence and then when he finds substantial evidence, then there is no need of reading the rest of it because he has passed on the substantial evidence.

Mr. DINGELL. This is a very high degree of protection for the consumer; this substantial evidence rule we are talking about, is a very high degree of protection for the consumer?

Mr. PETERSON. Yes; it would be—and for the——

Mr. DINGELL. What you are seeking here, Mr. Peterson, and I am trying to be fair with you——

Mr. PETERSON. I know you are.

Mr. DINGELL. As I say, I want a strong bill. What you are trying to do is to actually require a weakening of the amount of probative evidence that the Secretary must show and that must be shown in support of an order, let us say, delisting or refusing a listing of some of these coloring or chemical compounds which may be harmful to the consumer?

Mr. PETERSON. Not necessarily because it may protect the consumer as well as the user because if you were going to—if the consumer objected and then there was evidence then in which the objection is sustained or on the other hand if it was granted, and he would still have a right to know it was substantial evidence or a preponderance of.

Mr. DINGELL. I am going to deal more harshly than I want to with one of my Dad's old friends. My Dad, was very fond of you.

Mr. PETERSON. It was mutual.

Mr. DINGELL. Let us just get this down to the narrowest possible construction. It is not inconceivable that under your amendment a finding of the Secretary with regard to a substance which was in fact harmful to human beings, when consumed, could be upset more easily by somebody who wanted to use some harmful substance for his own profit, than it could be under the law as drafted under the Food Additives Act of 1958 and under S. 2197 and the equivalent House bill?

Mr. PETERSON. Not unless his decision was based on other than the preponderance of the substantial evidence. In other words, and that is what in all administrative boards we want to see that they are governed by the——

Mr. DINGELL. We are getting into a very, very technical question.

Mr. PETERSON. That is correct, that is right.

Mr. DINGELL. This business of substantial evidence and nonsubstantial evidence and probative evidence and all these other things, and there is a very, very technical legal question here and a lot of laymen would not understand it. In fact, it has been my experience that a lot of lawyers and some courts do not.

Mr. PETERSON. That is the trouble.

Mr. DINGELL. The thing that concerns me is you are coming in with this, in effect, you are requiring very close to a de novo trial of the issue.

Mr. PETERSON. No, sir.

Mr. DINGELL. You are not?

Mr. PETERSON. No.

Mr. DINGELL. Because you are saying here, what is the language you use here, "based on the preponderance of the substantial probative evidence."

Well, does that not practically require relitigation of this whole determination of the matter before the Secretary?

Mr. PETERSON. No, sir; it requires a review of the record to see that the Secretary acted upon the preponderance of the evidence before him that was probative, and substantial. If you have just the substantial evidence rule, and the courts are full of those decisions, you turn—and when they find substantial evidence, they do not need to read the record any further. They say they have had substantial evidence and then they quit, that is all they need.

Mr. DINGELL. Does the language of the Food Additives Act not say the whole record?

Mr. PETERSON. A fair evalution of the entire record; that is right.

Mr. DINGELL. That is his right. That is what it says.

Mr. PETERSON. That is a decided improvement.

Mr. DINGELL. If a court fails to go through the entire record, the court is, in effect, violating the law, and failing to carry out the responsibilities that the law imposes on it; is that not correct?

Mr. PETERSON. Well——

Mr. DINGELL. Now wait, just "Yes" or "No"?

Mr. PETERSON. Yes.

Mr. DINGELL. It is true if the court fails to make an evaluation on the evidence they are violating the law, they are committing a misfeasance or malfeasance in office and technically the judge who failed to make a full, fair review of the evidence in the record under existing law and under the law as it would be applied here would actually be subject to impeachment for failure to properly carry out his responsibility and he would actually be subject to overruling on a further appeal; is that not a fact?

Mr. PETERSON. Yes, sir, except a further appeal does not lie lots of times. Except lots of times they are the court of last resort and the fair evaluation of the whole record applies to the Secretary. The Secretary must do it.

Mr. DINGELL. It also applies to the court?

Mr. PETERSON. Yes.

Mr. DINGELL. On appeal and review by a court.

Let me ask you a question.

Mr. PETERSON. Yes.

Mr. DINGELL. Have your orangegrowers down there had any difficulty with this particular section?

Mr. PETERSON. No, sir; I have not appealed under this section.

Mr. DINGELL. Have any of your people had any trouble under any of the sections of the Food Additives Act of 1958?

Mr. PETERSON. No, sir; the food additives has been in such a short time there has been no particular problem arise under it.

Mr. DINGELL. But you have had no trouble?

Mr. PETERSON. No. Perhaps in my statement, out of the group embodied, many people—there is what they thought should be a fair formula for all administrative orders and we were not pointing our fingers; I believe in my first statement, we were not pointing a finger at Food and Drug because when you get a group of lawyers and orangegrowers and packinghouse men and each one makes their suggestion, they come up with certain suggestions, they all feel that there should be stronger provisions, they are all very complimentary of the wording of this committee. They think this committee took a great step forward in the wording written into the bill on food additives.

Mr. DINGELL. And they have no complaints with the way this previous language was written?

Mr. PETERSON. We have not had any trouble yet with Food and Drug but we are groping for solution of the whole administrative problem.

Mr. DINGELL. I believe you told us you had had a very good relationship with the Department of Health, Education, and Welfare.

Mr. PETERSON. Yes, my relationship and that of the citrus industry has been unusually good.

Mr. DINGELL. And you have had no trouble with your additives?

Mr. PETERSON. We have been able to go there and talk with them and we disagreed on one thing and found out they were right, the court found they were right on a thing we most violently disagreed, and they have taken time with us and Dr. Larrick has taken a lot of time with our problems and has helped us. And then I refer to him particularly because most of my dealings have been with him, so I am not one of those who have a running fight with the Department, and always I said, when we drew this act it was not pointing the finger at them but in the group when we came to administrative review, we got the benefit of the thinking of our group which I think is, I still think is good.

Mr. DINGELL. But you have no real reason for pushing it because of some difficulties you have had with the domestic industry?

Mr. PETERSON. Other than to throw every protection around an order and to be sure it is a considered order.

Mr. DINGELL. In other words, your statement today is based on what you would like the law to be rather than any reason, you do not have any real concrete difficulty in recent history?

Mr. PETERSON. That is right.

Mr. DINGELL. Which would compel you to have a scrap?

Mr. PETERSON. No, and I would not fuss with the committee after going through it if you do not want to put it in there.

Mr. DINGELL. You would not feel strongly?

Mr. PETERSON. No. We merely brought you the composite thinking of 20-odd groups.

Mr. DINGELL. Good.

Mr. PETERSON. And you know when you get into that, you bring—and I think it is good. I think at times it may be partially a formula somebody will improve on it. You folks did a good job. Your wording is much better than the old one because the wording you put in the food additive is far better than the old substantial evidence rule I consider.

Mr. ROGERS of Florida. Would my colleague yield?

Mr. DINGELL. I would be delighted to yield to my colleague.

Mr. ROGERS of Florida. I would just like to make a statement as to what the witness is trying to say. The citrus industry certainly would want every protection given and they have done it in this industry and they are all clear with Food and Drug. However, Mr. Peterson feels there may be situations that may arise in the future that always do with any law, that this is to look to the future, not just based on every instance of a few experiences that we may have had before the new law, but that this is looking to the future, and they are presenting this idea that they want the committee to consider.

Mr. PETERSON. That is correct, sir.

Mr. ROGERS of Florida. Simply if the order of the Secretary is changed after a color or an additive has once been decided upon, after hearing full evidence where the burden is placed on the user?

Mr. PETERSON. That is right.

Mr. ROGERS of Florida. Now, if the Secretary is going to change that, you just feel there should be a preponderance of the evidence to substantiate a change?

Mr. PETERSON. That is right, sir, that is well stated.

Mr. ROGERS of Florida. That is what you wanted the committee to consider?

Mr. PETERSON. Yes, sir, that is well stated.

Mr. ROGERS of Florida. Thank you.

Mr. DINGELL. I ask you just one more question.

Mr. PETERSON. Yes, sir.

Mr. DINGELL. I have a note here on your statement. You talk about in this business of provisional listings, do your people feel strongly about that? This amendment No. 4.

Mr. PETERSON. We just threw it in there. You have got deemed provisional listing and provisional listing and then you prefer generally to a kind of listing. We just thought, and I do not know but what maybe they thought, you cannot say permanet because nothing is permanently listed, and we just thought this would be an official listing. These others are kind of a temporary makeshift. We just threw it in as a word of identification and thought it was helpful and they may want another term, as final listing or something of that sort. But there were so many listings in there, it gets a little confusing, and we thought with a certainty it is officially listed. Some folks get confused with certification of listing and that is purely a, we thought, just a little clarifying.

Mr. DINGELL. May I ask you this question. You do not feel real strong about, very strongly about, any of these proposed amendments you have offered? The bill is generally satisfactory?

Mr. PETERSON. I feel strongly this: That the ethylene process should be clarified so we will not be under three acts. We know it is clarified so far as we are concerned under this act for citrus. We are not sure yet whether it is clarified yet as to fruits and vegetables. We do feel strongly, and I believe the Secretary has, that there will be no need for new study of our own particular color and I believe he has agreed that it may be certified and that it can be amended or a statement in the record to that effect. And I feel strongly that there should be sufficient review, but not necessarily this wording.

Mr. DINGELL. But in fact you do not, none of these amendments you have suggested are do or die amendments? In other words, that your industry must have to survive or even with which your people in your industry have had previous trouble?

Mr. PETERSON. If you straighten out the question with reference to insecticides, and the status of the ethylene process.

Mr. DINGELL. That would be satisfactory?

Mr. PETERSON. Yes; and the certification of our color which is already and what is already stated in the record; bear in mind these statements were prepared before his statement.

Mr. DINGELL. I understand.

Mr. PETERSON. And were authorized by a group in which I felt that I could not withdraw them because I had no authority to. But I would say that about three-fourths of what we were fighting for has or will be clarified before this is through, and this is also something which gives you a vehicle by which you may question the Secre-

tary or his representatives, and some of it you will find they agree with. Some they will not. But I do not want to be the vehicle of causing the bill to bog down. I think we must have the legislation.

Mr. DINGELL. The last page of your statement at the top you refer to the cancer clause. My colleague, Mr. Moss, has asked me to ask you this question.

Mr. PETERSON. I did not go into that because I am not an expert in that.

Mr. DINGELL. You certainly do not oppose the cancer clause?

Mr. PETERSON. And we just referred to Dr. Larrick's statement in a previous hearing.

Mr. DINGELL. You make no opposition to the cancer clause in the bill?

Mr. PETERSON. We feel it is not necessary, because I think if it is not safe, he must not certify it at all.

Mr. DINGELL. But as a practical matter, you say it is not necessary but you do not oppose the inclusion of it?

Mr. PETERSON. No. We would not oppose it as such, that is right. We are not far apart. When you read my statement and see what has been done already in the record, you will find we are not far apart because so far as oranges are concerned, as I construe the Secretary's statement, he is satisfied. But we do have these vegetable things, and when Mr. Noone gets to his part of the problem, most of ours will be cleared up.

Mr. DINGELL. Good.

Mr. PETERSON. We have no running fight.

Mr. DINGELL. No, no, I have no intention to engage in a running fight with you folks. I think you have been very fair and I want to thank you for coming, sir.

Mr. PETERSON. Thank you, sir. Thank you.

The CHAIRMAN. Thank you very much, Mr. Peterson.

Mr. PETERSON. Thank you.

(Mr. Peterson's prepared statement is as follows:)

STATEMENT OF J. HARDIN PETERSON, LAKELAND, FLA.

My name is J. Hardin Peterson, my address is Post Office Box 111, Lakeland, Fla. I am special counsel for Florida Citrus Mutual, a citrus growers organization, which at the present time has a membership of 10,049 bona fide growers. In addition to appearing for Florida Citrus Mutual, I am requested and authorized to appear on behalf of the Florida Citrus Exchange, a cooperative, shipping approximately 25 percent of the fresh fruit crop of the State of Florida. This presentation is also on behalf of and by authority of the Steering Committee of the Florida Conference Group.

The Steering Committee consists of members from the following organizations: Florida Fruit & Vegetable Association, Florida Citrus Commission, Florida Citrus Mutual, Florida Farm Bureau Federation, and Florida Packing House Managers' Association.

The Florida Conference Group represents all segments of agriculture of the State of Florida, and it is headed by the provost of agriculture of the University of Florida.

We recognize the need for immediate legislation. We think the principles of allowing tolerances and certifying for particular uses are sound and we hope that legislation along these lines will be passed:

We have studied H.R. 7624 and the companion Senate bill and these bills had the benefit of considerable discussion and study by all interested groups in Florida. The steering committee of the Florida Conference Group, meeting with a number of users, suppliers and Department of Agriculture chemists and ex-

perts, feels that the House bill should be amended along the lines proposed in the amendments which we have attached to this statement.

Amendment No. 1 is to make sure that pesticides on raw agricultural commodities and pesticide chemicals as used, or intended to be used, as set forth in the amendment are excluded from the purview of the color-additive bill. We wanted to be sure that plant regulators and pesticides were not covered by this legislation.

Amendment No. 2: The word "deception" is a broad term. Some people might claim that any type of color is deceptive. It was felt that the word "deception" should be limited so that the provision would apply only to harmful deception.

Amendment No. 3: The purpose of this amendment is to strengthen the review procedure. In some review proceedings all that is required is substantial evidence. It might be claimed that the evidence of one person would be substantial evidence as against a large number of others. The Food Additive Act, as pointed out by the chairman of the subcommittee, Mr. Williams, attempted to strengthen the other methods of review by requiring a fair evaluation of the entire record. We have attempted to go a little further and yet with not a radical departure and provide that an order shall be based upon the preponderance of the substantial probative evidence and upon a fair evaluation of a full, true, and correct record. We feel that an applicant ought to have the right to have his case judged upon the preponderance of substantial evidence worthy of belief.

Amendment No. 4 is more or less a clarifying amendment. The bill refers to listings, provisional listings and deemed provisional listings and our group felt that there might result some confusion in the terms and that the listing which was intended to be the regular or somewhat permanent listing should be termed the official listing.

Amendment No. 5 strikes out the parentheses and the words, "including such limitations at zero level." Our group felt keenly on this—that this clause just meant no tolerance. To attempt to fix a tolerance at zero level was in fact no tolerance at all. They felt this should be stricken from the bill.

Amendment No. 6 would require that in the termination of a provisional listing or deemed provisional listing the termination should be based upon substantial probative evidence. The bill, as drawn, gives wide discretion to the Secretary "whenever in his judgment such action is necessary to protect the public health." Our group felt that this judgment should be based upon something substantial and not whimsical.

The coloring of oranges is an economic necessity and has long been so recognized by the Government and the industry. Such coloring does not result in deceit because the maturity standards on oranges which are allowed to be colored are higher than those required for other oranges. In addition to that, colored oranges are stamped "color added." A high percentage of oranges shipped in fresh form is colored and some years in Texas the entire crop was colored. It is recognized by the Food and Drug Administration that the color used in the coloring of oranges is safe. We include certain pertinent data relative to the necessity and history of the coloring of oranges.

The orange is one of the very few fruits which has blossoms, small fruit and fully mature fruit on the tree at the same time; in the fall until the cool days come a fully ripe and mature fruit may be green on the outside, when cool weather comes the late variety of orange may have a rich color on the outside and not be fully mature inside. Later in the spring when the chlorophyll (green color) rises in the tree it goes into the leaves and new fruit and likewise goes into the mature and ripe fruit "regreening it," causing it to be green on the outside although it is fully mature and by reason of this it is impossible to sell unless it is colored.

This is borne out in the further statement of the Department in its Bulletin 1159, August 1923, as follows:

"It is well known that citrus fruits grown under certain climatic and cultural conditions may be mature and highly desirable for food while the skin of the fruit is still green in color. This is especially true of the Satsuma orange as grown in Alabama where the fruit frequently reaches a stage of physiological maturity at which it is palatable and attractive as an article of diet some weeks before it attains the characteristic golden-yellow color. In general, when it reaches full color on the trees the fruit in this region is characterized by a low acidity, with a comparatively high sugar content, and the overripe fruit is inclined to be insipid in flavor. It is important then, if this fruit is

to be furnished to the consuming public in its most desirable condition for food, that it be harvested before it becomes yellow on the trees.

"Danger of frost in this region after November 15 and the fact that the best market for this orange is in the early fall after the main portion of the California Valencia crop has been harvested and before the early oranges from Florida are mature enough to ship are further reasons for marketing this fruit early. On the other hand, green-colored fruit, no matter what the quality, is difficult to merchandise. In the mind of the consuming public a green-colored orange is immature and unfit for food. The public desires a fruit for decorative purposes as well as for eating, and a well-colored orange is much more attractive than one green or partially green in color. It is evident, then, that some method of treating this fruit so that it would assume a rich orange yellow color early in the season, when it is most desirable for food, would be of benefit to the industry and to the consuming public alike." (USDA Bulletin 1159, August 1923.)

Further along the same line in 1932 the U.S. Department in its yearbook in 1932 said:

"Some of the early fall varieties of oranges and grapefruit ripen when the fruit is still green in color. Later varieties that mature in the spring or summer assume the color of full maturity during the winter while the fruit is still immature, but when warm spring weather occurs the rind may turn green again. Thus while the edible part of the fruit ripens, there is a 'regreening' of the rind. Grapefruit growing inside of densely foliated trees never develops full color, although some of the best-flavored fruit is produced there. There is, therefore, no definite relation between flavor or maturity and the color of the fruit while on the tree. However, there is a very significant relation between the color of the fruit offered for sale and the price that it will bring, and citrus fruit producers have always faced the problem of making the color of ripe fruit match its flavor." (USDA, the yearbook for 1932, pp. 134–137.)

Actual encouragement was suggested by the Department as long ago as 1926:

"It is obvious, then, that treating fruit which is physiologically mature or has reached a stage in its development at which it has high dessert quality, so that it assumes a color or appearance pleasing to the eye and has a higher decorative value, is a legitimate practice in marketing and one which should be encouraged." (USDA Bulletin 1367, May 1926, p. 167.)

"The fact is becoming accepted that some citrus fruits reach their highest edible quality before their color changes from a chlorophyll green to the orange or yellow shades which the consumer and the public generally have come to associate with a citrus fruit in good edible condition." (Report, Bureau Plant Industry, U.S. Department of Agriculture, 1922, pp. 178–199, cited in Hearings on Food, Drug, and Cosmetic Bill, Committee on Interstate and Foreign Commerce, U.S. House of Representatives, 1933, p. 178.)

When this committee acted upon H.R. 7732 in the 85th Congress both the Department and the committee recognized the economic necessity and the fact that the color then used was harmless as used, but the coloring of oranges was caught in the overall problem and the interpretation of the word harmless. The hearing on H.R. 7732 on the following pages lists the use of color by all the packing houses in Texas and the use of 100 percent color by some of the packing houses and in some seasons 100 percent by all. The report on this bill shows the economic necessity. The 86th Congress by Public Law 86–2 provided for the certification of a new color known as citrus red No. 2. The provisions of this law limit its duration. In view of the fact that the scientific studies showing the safety of citrus red No. 2 have been completed, it would appear that there should be no further need to submit further data to require its certification or, as termed in the proposed amendment, "official" certification. We feel that this color should be considered as certified or immediately certified under the act. It is our understanding that it would be eligible for immediate certification and we would appreciate it if appropriate wording, either in the bill or in the report or by interrogation of witnesses in the record, could be developed, if there should be any question in the minds of the committee as to the right of immediate certification. When the bill passed the Senate, the distinguished senior Senator from Florida, Senator Holland, interrogated the chairman of the Senate committee handling the legislation and was assured that this color, citrus red No. 2, would be deemed certified, that neither its use or the use of ethylene would be considered as promoting deceit under the provisions of this bill and that the ethylene process of coloring oranges was not covered in this pending legislation. This was placed in the

record as part of the legislative history, and letters from Senator Holland to Dr. Larrick and from Dr. Larrick to Senator Holland in reply were placed in the Congressional Record at the time of the passage of the bill and for the convenience of this committee are included herein.

"AUGUST 20,1959.

"Hon. GEORGE P. LARRICK,
"*Commissioner, Food and Drug Administration,*
"*Department of Health, Education, and Welfare,*
"*Washington, D.C.*

"DEAR MR. LARRICK: Several questions have been raised by our citrus industry with reference to certain provisions of S. 2197, the color additive amendments of 1959. I believe these questions can be cleared up by a colloquy on the Senate floor if we can agree upon the intent of these provisions in the bill. Therefore, I would like to ask for your comments on three particular matters with the understanding that this letter and your reply thereto will be placed in the Congressional Record during debate on the bill as part of the legislative history of the act.

"First, the question has been raised as to whether the definition of the term 'color additive' as contained in S. 2197 includes the ethylene process now used in the coloring of citrus fruit and certain other fruits and vegetables. In view of the fact that this process does not actually add color, and in view of discussions we have had on the subject, I do not believe there is any intention of covering the ethylene method in this definition. I will appreciate your assurance that this is the case.

"Second, the term 'promote deception of the consumer' used in the bill is extremely broad. As you know, in the coloring of citrus every effort has been made to prevent the use of color for deception and we would like your assurance that the long established practice of using ethylene and the use of the color recently certified for the coloring of sound, mature citrus fruit meeting the maturity standards of the respective States, are not considered as 'promoting deception' as the term is used in the bill. In view of the statements made by the Department in its message transmitting this bill, I feel sure that it is not intended to claim that these processes promote deception, but I would appreciate your confirmation of this conclusion.

"Third, it is my understanding that citrus red No. 2 listed under the provisions of Public Law 86–2, 86th Congress, approved March 17, 1959, shall be deemed provisionally listed under the provisions of section 203 of the bill. I will appreciate your confirmation of this conclusion, also.

"Thanking you in advance for your cooperation and with kind regards, I remain.

"Yours faithfully,

"SPESSARD L. HOLLAND."

"AUGUST 20, 1959.

"Hon. SPESSARD L. HOLLAND,
"*U.S. Senate, Washington, D.C.*

"DEAR SENATOR HOLLAND: This replies to your letter of August 20, 1959, asking for our views on three questions that have been raised about S. 2197, the Color Additive Amendment of 1959.

"It is our understanding that the treatment of citrus fruit with ethylene after harvest does not add color, that it supresses the formation of certain coloring materials, such as chlorophyll and thus allows the yellow or orange coloring contributed by other natural components to become more apparent. Therefore, we would not regard ethylene used in this way on citrus fruit as a color additive within the meaning of the bill.

"The second question is whether the application of ethylene or of citrus red No. 2 to sound, mature oranges that meet the minimum maturity standards established under the laws of the States in which the oranges are grown would be considered as promoting deception as the term is used in S. 2197. We would not consider such use as promoting deception.

"The third question is whether citrus red No. 2 as listed under the provision of Public Law 86–2 would be deemed provisionally listed under the provisions of section 203 under S. 2197. It would be deemed provisionally listed.

"Sincerely yours,

"GEO. P. LARRICK,
"*Commissioner of Food and Drugs.*"

These appear on page 15397 of the Congressional Record for August 24, 1959.

In the legislation S. 79, 86th Congress, 1st session, which became Public Law No. 86–2, this committee in its report No. 44 again set forth:

"The practice of using artificial color to color the skins of fully mature, sound oranges has prevailed in Florida and Texas for many years. Such coloring is necessary because fully mature fruit from those areas in many instances may be greenish and nonuniform color."

and said on page 2 of the report:

"But in the quantities necessary to color the skin of oranges it is without hazard to man." * * *

"The committee has concluded from the testimony presented that enactment of this bill will in no wise be detrimental to the public health or introduce into the food supply an unsafe color."

In referring to the delisting of the color originally used, F.D. & C. red No. 32, page 4 of the report points out that the delisting created an emergency for the segment of the orange industry involved "because large quantities of Florida and Texas oranges are green in color when harvested in their mature state and because such oranges, when not artificially colored, have met strong consumer resistance and the coloring practice has thus become an economic necessity for this part of the industry." More than 59 percent of the oranges shipped out of Florida are color-added. During the period when F.D. & C. red No. 32 was delisted and before citrus red No. 2 was listed the report of 12 cities in Canada shows that the orange shipments from Florida dropped to 656 cars. The United States had been gradually developing the Canadian market as shown by the increase from 964 cars in the 1953–54 season to 1,388 cars in the 1955–56 season and this dropped to 656 cars in the 1957–58 season.

THE ETHYLENE PROCESS

I have referred to the ethylene process. This process affects all citrus producing areas and is largely used in California, but is also used in Florida and in many instances used preparatory to the color-added process by degreening the oranges. This process was developed by the U.S. Department of Agriculture through the laboratory for fruit and vegetable chemistry in Los Angeles. The persons conducting this work were: Frederick E. Denny, E. M. Chace, and C. G. Church, and according to the research achievement sheet of the U.S. Department of Agriculture, Agriculture Research Administration, which recites it is prepared in the public interest as a brief report of noteworthy research, issued April 1952, it is covered by U.S. patent, Public Service 1475938, December 4, 1923. This report estimates that the total value of achievement at that time was $40 million. It would now run many times this amount in view of the increased volume of shipments and increased use of coloring. Among other things, this research sheet quoted the following:

"About 30 years ago chemists in a U.S. Department of Agriculture field station in Los Angeles discovered that ethylene gas added to citrus storage atmosphere in very small amounts causes the fruit to lose the green color and develop a natural mature color within a few days. Thus they enabled the growers to market some of their fruit earlier than would be possible otherwise. Their discovery found almost immediate application to oranges and lemons, and subsequently to bananas, tomatoes, persimmons, pears, and other fruits, and still later to walnuts for the special purpose of loosening green stick-tight hulls.

"This discovery has been important among the scientific developments that have made large growth of the citrus industry possible, including improvements in production, processing, and waste utilization. At the time scientists discovered that ethylene accelerates coloring of fruit, they did not know that many kinds of fruit give off very small amounts of ethylene gas as they ripen. That discovery came later. Thus pears, for example, evolve ethylene as they mature, and this ethylene hastens ripening of less mature fruit exposed to the same atmosphere. On the other hand, ethylene treatment of citrus fruits causes no change in the composition of the edible portion of the fruits * * *

"The ethylene process was almost immediately adopted by the citrus industry for inadequately colored fruit that has reached adequate maturity in other respects. It is now widely used for many fruits. D. G. Sorber, Western Regional Research Laboratory, Bureau of Agricultural and Industrial Chemistry."

In a notice to growers dated July 16, 1934, the Secretary of the Department of Agriculture of the United States, stated:

"The ethylene process which has been in use for a number of years does not add any color not normal to the orange but constitutes in effect a kind of blanching process causing the disappearance of the green color (chlorophyll) in the superficial layers of the skin, thereby unmasking the natural yellow to red pigmentation already present. In no case by the use of this process is varietal identity concealed; the effect is one ordinarily produced by natural development."

It is important that this method be continued. We have been assured that it is not under this bill. The question has been raised as to whether it is under the Food Additive Act and what the procedure affecting it should be. This, I understand, may be developed more in detail in other statements, but I would like to emphasize the importance of its being cleared up so there will not be any interruption in the use of the ethylene process which is so vital to all of the citrus producing areas and to a great number of fruit and vegetable producers. Its interruption for a single day would disrupt the entire marketing situation and cause great financial loss.

With reference to the so-called cancer cause found on page 10 of the House bill, certainly we all want to use every effort to prevent the use of any additive which as used would create any hazard. We understand that this will be discussed more in detail by other people so we will not go into detail. We feel, however, the statement of Dr. Larrick, appearing on pages 453 and 454 of the House hearings on the Food Additive Act and the statement in the Senate report adequately covered this situation. The design of the bill is to protect against hazards to health of any kind. The wording of this section would only cause confusion.

We shall be glad to furnish any information the Committee may desire. There will be many other suggestions. We urge that the committee consider the various suggestions and urge that there be a bill which will prevent hazard to public health and yet at the same time be so drafted as to assure an adequate supply of safe colors without the constant fear of these colors being delisted without full justification. Out of experience and information had by this great committee we feel that this will be done.

Thank you.

PROPOSED AMENDMENTS TO H.R. 7624

Amendment No. 1

On page 3, line 4, after the word "include" insert the following wording: "A pesticide chemical in or on a raw agricultural commodity or a pesticide chemical to the extent that it is intended for use, or is used, in the production, storage or transportation of any raw agricultural commodity, or".

Amendment No. 2

On page 10, line 25, after the word "promote" and before the word "deception" insert the word "harmful".

Amendment No. 3

On page 13 strike out lines 1 to 17, both inclusive, and insert the following:

"Procedure for Issuance, Amendment, or Repeal of Regulations, and Review Thereof

"(d) The provisions of section 701 (e), (f), and (g) of this act shall apply to and in all respects govern proceedings for the issuance, amendment, or repeal of regulations under subsection (b), (c), or (e) of this section (including judicial review of the Secretary's action in such proceedings) and all orders listing or denying listing of colors (except orders provisionally listing or listing deemed listed or listing specifically authorized in this act) and the admissibility of transcripts of the record of such proceedings in other proceedings, except that—

"(1) the Secretary's order after public hearing (acting upon objections filed to an order made prior to hearing) shall be based upon the preponderance of the substantial probative evidence and upon a fair evaluation of a full, true, and correct record, and shall include a statement setting forth in detail the findings and conclusions upon which the order is based, and

"(2) the scope of judicial review of such order shall be in accordance with the judicial review provisions of section 409(g), except that the rule for judicial review shall be that the findings of the Secretary with respect to questions of fact shall be sustained only if based upon the preponderance of substantial probative evidence and upon a fair evaluation of a full, true, and correct record and the court upon such judicial review shall not sustain the order of the Secretary if he failed to comply with these requirements."

Amendment No. 4

On page 16, line 5, after the words "date of" strike out "a" and insert in lieu thereof the word "official".

Amendment No. 5

On page 19, line 4, strike out the following: "(including such limitations at zero level)".

Amendment No. 6

On page 19, line 20, after the word "judgment" insert the following: "based upon substantial probative evidence,"

The CHAIRMAN. Mr. J. A. Noone.

STATEMENT OF J. A. NOONE, TECHNICAL ADVISER, NATIONAL AGRICULTURAL CHEMICALS ASSOCIATION

THE CHAIRMAN. Mr. Noone, will you identify yourself for the record, please?

Mr. NOONE. My name is Joseph A. Noone. I am technical adviser to the National Agricultural Chemicals Association, and I am appearing here in its behalf.

On behalf of the National Agricultural Chemicals Association, we wish to express our appreciation for the opportunity of submitting our comments on H.R. 7624 and S. 2197 and hereby respectfully request that an amendment be made to those bills for the purposes of clarification of their scope and to eliminate the possibility of duplicating or even conflicting controls over certain agricultural chemicals in the event that either bill is enacted.

By way of background, we point out that the National Agricultural Chemicals Association is a trade association composed of manufacturers and formulators of agricultural pesticides and related agricultural chemicals. Its members produce and distribute more than 90 percent of the total amount of such chemicals used in the United States. As such, our members are vitally interested in the proposed legislation insofar as it relates to their products.

At the present time, insecticides, fungicides, weed killers, rodenticides, nematocides, plant regulators, defoliants, and desiccants are subject to the provisions of the Federal Insecticide, Fungicide, and Rodenticide Act (61 Stat. 163; 7 U.S.C. 135–135k). These products are collectively referred to as pesticides or agricultural chemicals. That act was approved in 1947 and expanded by amendment in 1959 (Public Law 86–139). It prohibits the interstate marketing of such products which are adulterated or misbranded or which have not been registered with the U.S. Department of Agriculture. The registration requirement constitutes a premarketing control of the products.

In 1954, the House Interstate and Foreign Commerce Committee after very careful study and consideration reported a bill (H.R. 7125), introduced by Congressman A. L. Miller, to regulate residues of these pesticide chemicals, as they are designated in the bill, in or on raw agricultural commodities.

That bill became Public Law 518 of the 83d Congress and enacted section 408 of the Federal Food, Drug, and Cosmetic Act. It is commonly referred to as the pesticide chemicals amendment or the Miller amendment to that act.

The pesticide chemicals amendment to the Federal Food, Drug, and Cosmetic Act is quite similar in principle and provisions to the food

additives amendment—Public Law 85–929—approved in 1958. In fact, it may be considered to have been the model for the food additives amendment. It requires that the products subject to it be adequately pretested to establish their safety on food prior to marketing and that the proposed use be approved by the Food and Drug Administration and the U.S. Department of Agriculture. Its value and effectiveness have been publicly attested to by officials of the Food and Drug Administration, the U.S. Department of Agriculture, and various land-grant colleges.

When the House Interstate and Foreign Commerce Committee was considering the bills which led to the enactment of the Food Additives Amendment of 1958, it recognized the adequacy of the pesticide chemicals amendment to control pesticide chemical residues in or on raw agricultural commodities and adopted an amendment specifically excluding such pesticide chemicals from the scope of the food additives amendment.

We now find that because of the broad scope of the definition of the term "color additive" in H.R. 7624 and S. 2197 some pesticide chemicals might be considered to fall within it and thereby become subject to the proposed color additive amendments as well as to the pesticide chemicals amendment and the Federal Insecticide, Fungicide, and Rodenticide Act.

While the bills appear to be intended to regulate colors, dyes, and pigments, and the legislative record to date supports such a view, the definition of "color additive" therein, section 101(c), could be interpreted to include additional materials. In addition to dyes and pigments, it encompasses, and I quote the other pertinent portions:

> Other substances * * * (which) * * * when added or applied to a food * * * is capable (alone or through reaction with other substance) of imparting color thereto.

Certain pesticide chemicals could be considered to fall within the scope of this definition since they have the ability to promote the coloring of raw agricultural commodities. For purposes of illustration, we list a few examples:

Certain fungicides used in fruit production have the effect of not only protecting the tree against plant diseases but also of giving better color and finish to the fruit. This has been reported on numerous occasions in the technical literature by research workers in Federal and State experiment stations. Likewise, some plant regulators applied to plants promote the development of color in the produce derived thereform.

For example, dilute solutions of 2,4-D sprayed on the vines will promote the development of color in certain red varieties of potatoes. 2,4,5-trichlorophenoxypropionic acid, which is used to reduce premature drop of apples, has the property of promoting color increase in certain varieties.

We wish to point out that these pesticide chemicals are not dyes or pigments and do not impart an artificial color to the raw agricultural commodities. Rather they promote the development of the natural color of the produce by their effects upon the physiological processes of the plant or the produce thereof.

The exemption provided in the bills from the definition of the term "color additive" for "any material which the Secretary, by regula-

tion, determines is used (or intended to be used) solely for a purpose or purposes other than coloring" does not serve to exclude these agricultural chemicals from the definition since their effect on the color of the produce is well known and is sometimes a reason for their use.

In view of the fact that the safety of traces of these agricultural chemicals in or on raw agricultural commodites is now as well regulated and provided for in the pesticide chemicals amendment to the Federal Food, Drug, and Cosmetic Act—Public Law 518, 83d Congress—as it would be in the proposed "Color Additive Amendments of 1959," there would appear to be no reason to subject them additionally to the latter legislation.

The need for exempting such pesticide chemicals from the proposed "Color Additive Amendments of 1959" is further pointed up by the fact that the proposed new sections (403(1) and 706(b)(3) of the Federal Food, Drug, and Cosmetic Act, to be added by sections 102 (a)(3) and 103(b) of the pending bills, provide that the Secretary of Health, Education, and Welfare may prescribed the directions and other labeling to be used upon subject color additives. Authority and responsibility to control the labeling of pesticide chemicals and formulations thereof have already been assigned to the Secretary of Agriculture under the provisions of the Federal Insecticide, Fungicide, and Rodenticide Act, the operations of which are coordinated with the pesticide chemicals amendment to the Federal Food, Drug, and Cosmetic Act. A duplication of the regulatory controls over the labeling of these products in two Federal agencies would put an unnecessary burden upon both the Government and the industry and might result in some incompatible requirements.

In light of the foregoing considerations, we respectfully request that the bills be amended so as to include in the definition of "color additive" an exemption for pesticide chemicals which are already subject to the pesticide chemicals amendment to the Federal Food, Drug, and Cosmetic Act and the Federal Insecticide, Fungicide, and Rodenticide Act.

Our proposed amendment to H.R. 7624 is as follows:

Amend page 3, line 4, by inserting after the word "include" the phrase:

a pesticide chemical in or on a raw agricultural commodity or a pesticide chemical to the extent that it is intended for use or is used in the production, storage, or transportation of any raw agricultural commodity or.

The exemption provision now in lines 4–7 of page 3 would then read:

Except that such term does not include a pesticide chemical in or on a raw agricultural commodity or a pesticide chemical to the extent that it is intended for use or is used in the production, storage, or transportation of any raw agricultural commodity or any material which the Secretary, by regulation, determines is used (or intended to be used) solely for a purpose or purposes other than coloring.

A similar amendment should be inserted in S. 2197.

The exemption amendment which we propose is identical with that adopted by the House Interstate and Foreign Commerce Committee when it was considering the food additives amendment and is now part of that amendment.

We again express our appreciation for the opportunity of submitting our comments on these bills. We trust that the committee will

find them constructive and will adopt our proposed amendment. If any further explanation of our position or proposed amendment is desired, we would be pleased to furnish it.

I might add that I heard Mr. Rankin indicating that the Department of Health, Education, and Welfare, with whom we have discussed the necessity for such an amendment, will shortly advise the committee of its views thereon.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much, Mr. Noone, for your testimony. I want to compliment you on your pronunciation of the word on page 3. [Laughter.]

Mr. NOONE. Probably the first witness who has appeared here.

The CHAIRMAN. I would undertake to spell it but not to pronounce it.

Any questions, Mr. Williams?

Mr. WILLIAMS. No questions, Mr. Chairman.

The CHAIRMAN. Mr. Dingell.

Mr. DINGELL. Yes, Mr. Chairman. Thank you.

You are not advocating in any of your amendments that the ability of the Secretary to act with regard to harmful residues of either coloring materials, pesticides, preharvest or postharvest be in any way diminished, are you, sir?

Mr. NOONE. No, sir. All we are doing is proposing that inasmuch as the residues of agricultural chemicals are now regulated under another provision of the Food, Drug, and Cosmetic Act, that they not additionally be subject to regulation under this bill, but we are not at all testifying or proposing any changes in the authority of the pesticides chemicals amendment.

Mr. DINGELL. I wanted to be very clear on this. The amendment you are suggesting has nothing to do with the recent cranberry episode?

Mr. NOONE. No, sir.

Mr. DINGELL. And you or your organization are not in any way advocating any diminution of either the Food and Drug or the Health, Education, and Welfare authority with regard to residues of pesticides or weed killers in shipment in interstate commerce?

Mr. NOONE. No, sir.

Mr. DINGELL. Thank you very much.

The CHAIRMAN. Mr. Rogers.

Mr. ROGERS of Florida. Just along that line. It appears to be the intention of the Department, they, too, do not want that.

Mr. NOONE. That is to clear that up.

Mr. ROGERS of Florida. This is just to clear up the coloring feature that you explain in your statement.

Mr. DINGELL. You mean with reference to colors and not cranberries?

Mr. ROGERS of Florida. You get them as to pesticides.

The CHAIRMAN. Mr. Brock.

Mr. BROCK. No questions.

The CHAIRMAN. Mr. Noone, you refer in your testimony solely to exemption of pesticides, and so forth. In the action taken by the Secretary of Health, Education, and Welfare in the cranberry incident, was that taken under the pesticide amendment?

Mr. NOONE. The pesticide chemicals amendment, yes, sir.

The CHAIRMAN. In other words, the action of the Secretary in the cranberry situation took place under the authority in the pesticide amendment?

Mr. NOONE. Yes, sir.

The CHAIRMAN. Was the same law involved in the poultry problem?

Mr. NOONE. No. That action was taken under the Food Additives Amendment of 1958.

The CHAIRMAN. In other words, by your amendment you propose that an exemption be made to the pesticide amendment? Do you propose exemption be made to the food additives amendment too?

Mr. NOONE. Mr. Chairman, I am not proposing that any exemption be made to the Pesticide Act. I am proposing that inasmuch—in fact, I want to change the pesticide chemicals amendment. I am proposing——

The CHAIRMAN. You want an exemption?

Mr. NOONE. From the color additives amendment.

The CHAIRMAN. Yes.

Mr. NOONE. In view of the regulation under the pesticide amendment. But not proposing any change in the pesticide amendment. I want that to stand.

The CHAIRMAN. You think the color additive amendment proposed here might in some way supersede certain provisions of the Pesticide Act?

Mr. NOONE. Not supersede, sir, but it might be that a certain chemical could be, because it would have this incidental effect of developing better color or finish on an apple, be in a position of being under the Pesticide Act because it kills the plant diseases and be under the color additives amendment because it gave better finish. I do not think this bill, the color additives bill, was intended to get products which are not artificial colors but which merely by keeping a tree in healthier vigor or protecting it from insect and disease damage have the indirect effect of giving better color and better finish.

The CHAIRMAN. I assume from that, then, there is no possibility of any such conflict between the food additives amendment and this proposed color additive amendment?

Mr. NOONE. Sir, I am not too well acquainted with the food additives amendment, but in reading over these bills, your bill and Senator Hill's bill, I notice that efforts are made to coordinate them. I am not prepared to try to explain how, but I see the references periodically to the food additives amendment section.

The CHAIRMAN. Thank you very much. We appreciate your appearance and your testimony here.

Mr. DINGELL. Mr. Chairman, just this one question, sir: You do not want to open loopholes? Although a substance might be used primarily as a coloring substance it is not your intention to treat it under the pesticides law?

Mr. NOONE. No, sir; I know of no such material, but if one of our products had a dual function of being a pesticide and also, let us say, a dye, I am thinking now you had to spray orange trees in Mr. Rogers' territory that would artifically color the orange, then we would feel that function of coloring the orange was under here. We are only

saying to the extent it is used for the purpose covered by the Miller pesticide residue amendment, it should not be subject to dual regulation under this amendment.

Mr. DINGELL. Let me just ask one question and I want to be fair with your people. Would it satisfy you if we were to have a letter from the Food and Drug Administration stating that it is not their intention to treat things which are, in fact, pesticides, as color substances?

Mr. NOONE. Yes, it would. It takes a very farfetched interpretation, I will admit, to even think that they are under here, but that possibility existed. If the Department were to file a letter clarifying the status of these materials the same as they have on the ethylene process, then there is no need for my amendment, sir. It would be perfectly clear.

Mr. DINGELL. Very good. I will try to see we get something like that, if it be possible and proper.

Mr. NOONE. Yes.

The CHAIRMAN. Thank you very much.

Mr. NOONE. Thank you, gentlemen.

The CHAIRMAN. Are there any other witnesses here today who desire to be heard?

This concludes the witnesses to be heard today. We have some statements for the record.

One is from Mr. Lessing L. Cole, chairman of the board of the Kolmar Laboratories, Inc., Port Jervis, N.Y. That will be included in the record.

Then there is one from Mr. Robert R. Hershman, executive assistant, National Paper Box Manufacturers Association, Philadelphia, which will be included in the record.

And there is a statement of Miss Sally Butler, director of legislation, General Federation of Women's Clubs, which will be included in the record.

(The documents referred to are as follows:)

NATIONAL PAPER BOX MANUFACTURERS ASSSOCIATION, INC.,
Philadelphia, Pa., January 27, 1960.

HON. OREN HARRIS,
Chairman, House Interstate and Foreign Commerce Committee,
House of Representatives, Washington, D.C.

DEAR MR. HARRIS AND COMMITTEE MEMBERS: The National Paper Box Manufacturers Association had planned to have a representative appear before your committee tomorrow to testify on the hardships, resulting from the 1958 Food additives amendment to the U.S. Food, Drug and Cosmetic Act, to the box manufacturers and suppliers industry. Due to conflicting engagements, none of our officially appointed representatives or our two top officers are able to appear at your committee hearing. This is most regrettable. If future hearings are to be held, we would appreciate advanced knowledge so as to be given time to appear and express the opinions of our industry.

Our association, speaking for 300 box manufacturers and more than 100 suppliers of boxboard, glue, ink, paper and other items would have presented the following statement, an example of one box manufacturer, which spells out his specific problems and thinking:

"As you probably know we manufacture no food. For over 80 years we have been manufacturing set-up paper boxes for the confectionery industry, using the standard paperboard and covering papers with no deleterious effect.

"In the practice of packaging confections the vast majority of pieces are cupped in individual containers and the top layer covered with either a liner or paper pad before the box is lidded. Consequently the possibility of the candy coming into contact with the box itself is extremely remote, if at all.

"Nevertheless, many confectioners can and will ask for guarantee from their boxmaker as to the safety of the container they are supplying.

"This places us in a difficult, if not impossible, situation.

"The only guarantee we can presently give is that there is nothing used in our production of boxes that can be reasonably expected to become a component or to affect the characteristics directly or indirectly of food packed therein.

"The boxmaker has no control over the manufacture of these materials except to choose the source. Must he require the guarantee from each of his suppliers as to the safety of their product?

"If so, until each of the materials which form the component parts of a box are cleared or adequately pretested, we as boxmakers are helpless as to our choice of both material and source.

"It is our earnest desire as an industry to comply with the law and to incorporate nothing into the making of a paper box which would in any way be injurious to health.

"We, as an industry, are therefore immediately dependent upon the effort and progress of our suppliers to have their product cleared, if this is required by law. As far as we have been able to determine, clearance of paperboard, paper and glue as we require in the making of paper boxes, will not be attained before the effective date of the amendment. Any interruption of the usage of the materials which form the basis of our industry would work incalculable harm, both to us as boxmakers and to our customers who use our product.

"Due to the fact that over many years millions upon millions of our packages have been and are being used as food containers without having once been suspect we respectfully request an extension of time be granted beyond March 5, 1960, in order that we may continue to manufacture paper boxes using materials as formerly and until such time as they are granted, if found necessary.

"There is nothing used in our production of containers that can 'reasonably be expected to become a component, or to affect the characteristics, directly or indirectly, of food packed in the container.'

"Our members, wishing to do everything in their power to comply to the new amendment, find it physically and financially impossible to do so. Further, there is a need for clarification on the part of the Food and Drug Administration as to the steps to be taken by each and every group of suppliers and box manufacturers, to prove that their products are acceptable for food contact uses. The principal question is 'How can these products when collectively assembled in a box or package be proved acceptable?'

"There are many avenues of doubt and misunderstanding which should be aired and clarified. The honorable Congress is the appropriate group to clarify these doubts.

"Accordingly, this association, on behalf of its more than 400 members, nationwide, petitions Congress to grant a reasonable extension of time before the amendment is put into effect, and asks that Congress give additional thought to the impossibility of complying to all sections of this amendment. We feel that Congress, after careful study, will realize the hardships to the packaging industry, and will make the necessary changes in the law."

On behalf of National Paper Box Manufacturers Association,

ROBERT R. HERSHMAN, *Executive Assistant.*

KOLMAR LABORATORIES, INC.,
Port Jervis, N.Y., January 25, 1960.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce, House Office Building, House of Representatives, Congress of the United States, Washington, D.C.

DEAR MR. HARRIS: We appreciate your letter of January 14, advising us of the hearings before your committee on pending legislation affecting the use of coal tar colors in many of our products.

In order to preserve the time of your committee, we shall not make an oral presentation, but we would appreciate your making this letter a part of the record of these hearings. The reason why we do not prefer to appear in person is that we have cooperated with the Toilet Goods Association in preparations for this hearing, and we fully support the views on this legislation presented on behalf of the association by Dr. Paul G. Lauffer. We have been members of

this association, which represents the interests of the toilet goods industry, for more than 20 years.

Kolmar Laboratories is a worldwide organization with branches not only in the United States but also in Canada, Mexico, England, Australia, France, and Germany, as well as licensing arrangements in Japan and India, and employs many of the finest scientists engaged in the toilet goods and cosmetic industry. The work of these scientists has been made available to the toilet goods association in this problem of colors particularly vital in the manufacture of cosmetics. We shall be glad to make it available to your committee should you find that it would be useful in your further deliberations.

May we express the sincere hope that satisfactory legislation will be passed by the Congress to protect and preserve the use of these completely harmless products so that the women of America can continue to enjoy the benefits of safe and harmless toilet preparations.

Respectfully submitted,

LESSING L. KOLE, *Chairman of the Board.*

STATEMENT OF GENERAL FEDERATION OF WOMEN'S CLUBS, WASHINGTON, D.C.

I am Sally Butler, director of legislation for the General Federation of Women's Clubs which was chartered in 1901 by the U.S. Congress. The purpose of this organization, as set out in the charter, is "To unite the women's clubs and like organizations throughout the world for the purpose of mutual benefit and for the promotion of their common interest in education, philanthropy, public welfare, moral values, civic, and fine arts."

We appear here today because we believe it is in the mutual interest of the consumer. We are concerned with the use of certain colorings used in and on foods. We worked with the Pure Food and Drug Administration in support of the food additive law passed in 1958.

We have opposed the use of coloring on oranges which has been proved harmful to human beings when used on foods offered for human consumption. Of course women do not want coloring used in any quantity in foods, drugs, or cosmetics which has been proved to be dangerous if used by humans or which has produced cancer in rats.

We grant that certain harmless coloring used in food items makes them more attractive, such as harmless coloring used in Jello. This type of coloring is used to make the Jello look like the color of the fruit which the Jello is flavored to imitate and to make it more attractive to the purchaser. This has been accepted by the consumer.

All food additives are not accepted by the clubwomen who buy food for their families. This is true even if the coloring is not designated as injurious by the Pure Food and Drug Administration. I give you as a point in case—Why is a red substance used to color some Irish potatoes and some sweetpotatoes and yams? This type of coloring which rubs off and which is used to try to make potatoes look like a certain type of potato is deceptive for the women know the difference between red and white potatoes. They know the difference between the naturally red skins and colored red ones. Besides being deceptive it is revolting to a homemaker to try to prepare a meal for her family and to find the potatoes have been dyed.

People will buy potatoes regardless of color because they are a very valuable food. This is a splendid example of adding something to food which is of no value to anyone except to the producer who can charge extra because he has colored the food. The same type of coloring is used for some sweetpotatoes. Other foods are likewise colored because someone thinks they look more attractive to the purchaser. For instance, frankfurters and wieners are colored, many times so much so that the women wash them before using because of the excessive coloring.

It is understandable that in this competitive society each producer or processor wants to make his product have eye appeal so it will attract the purchaser. However, the first consideration of anyone or any group which produces food must be—Is it absolutely safe for human consumption? If there is any shadow of a doubt the majority of women purchasers would not buy any product which might be dangerous if eaten by her family. In these days when moral integrity is at a low ebb it is necessary to have rigid standards. Women are grateful that the Pure Food and Drug Administration has always had the health and

welfare of the consumer as their first interest. It would be a tragic day in U.S. history if this policy ever deviated in the slightest degree. The General Federation of Women's Clubs has always had an interest in the consumer. There is a chairman for consumer interests in every State and in turn in most every club. There is an American Home Department in the General Federation under which the consumer chairmen function, all for the health and welfare of the American people—the consumer. They want clean, wholesome, nourishing food for their families. Women are being educated to know that it is not the superficial thing such as eye-catching treatment of food, drugs, or cosmetics which is most important. They know they want no element of doubt as to the suitability of any product for human consumption.

We are depending upon you gentlemen of this 86th Congress to pass laws which will safeguard the individual. We believe in business under the free enterprise system but no business would have any unfair advantage over any like business if all are required to conform to laws which do protect the consumer. Fraud and deception have no place in the American way of life.

It is the duty of those responsible for producing the food we eat to make it clear by labeling all their products so the public will know what they are buying. It is the duty of the Department of Health, Education, and Welfare to guard the consumer. It is the duty of the Congress to pass laws which will best serve the public. The women of the General Federation of Women's Clubs are depending upon all those concerned never to fail the consumer. We urge you of this Congress to pass legislation which will give the consumer every possible protection when additives are used in foods, drugs, or cosmetics.

The CHAIRMAN. This will conclude the hearings at this time, and the committee will recess the hearings until February 10, 1960, in this room at 10 o'clock.

(The following letters were later received for the record:)

NATIONAL AGRICULTURAL CHEMICALS ASSOCIATION,
Washington, D.C., February 15, 1960.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: On January 29, Mr. J. A. Noone appeared before your committee and testified on behalf of this association in reference to the color additives legislation now being considered by your committee (S. 2197 and H.R. 7624). In his testimony Mr. Noone pointed out that because of the broad scope of the definition of the term "color additive" in this legislation some pesticide chemicals might be considered to fall within its scope. He pointed out that these same pesticide chemicals are already subject to regulation by the Department of Health, Education, and Welfare under the pesticide chemicals amendment to the Federal Food, Drug, and Cosmetic Act (Public Law 518 of the 83d Cong.). In order to define more precisely the scope of this legislation and to avoid dual regulation, he requested that the bills be amended to provide an exemption for pesticidal chemicals which are already subject to this pesticide chemicals amendment.

In subsequent questioning, Congressman Dingell asked Mr. Noone if it would be satisfactory to have this exemption handled by a letter from the Food and Drug Administration stating that it is not their intention to handle these pesticides as color additives. In response to this question Mr. Noone stated that this would be satisfactory.

Since Mr. Noone's testimony, the lawyers committee of our association has had an opportunity to consider this matter. This committee is composed of counsel for many of the leading companies producing pesticide chemicals. It was the opinion of the members of this committee that this exemption should be in the form of an express amendment along the lines proposed by Mr. Noone in his testimony.

In expressing reservation of whether this exemption could be properly handled by means of a letter from the Food and Drug Administration, members of the committee pointed to a recent decision of the Supreme Court, *Commissioner of Internal Revenue* v. *Acker*, 361 U.S. 87. In this decision the Court refused to consider the report of both the Senate committee and the House committee in reference to the legislation that was in question in that decision. The Court

also refused to consider a regulation which had been issued by the Bureau of Internal Revenue based upon the theory of the statute which had been adopted by the House and Senate committees in their reports. In this case the Court considered the legislative history as not being sufficient to overcome what was regarded as the clear language of the statute.

Some members of the lawyers committee of this association were of the opinion that the language of the proposed color additive legislation might cover pesticide chemicals being produced by their companies even though they are presently regulated under the pesticide chemicals amendment.

Since Mr. Noone's testimony, the Secretary of Health, Education, and Welfare, in a letter to you as chairman of the committee, copy attached, has made it clear that it was not the intention of his Department to regulate pesticide chemicals under the color additives amendment, pointing out that they are already regulated under the pesticide chemicals amendment, and would continue to be so regulated. We believe it clear that it is the intention of all parties concerned with this legislation that pesticide chemicals should not be included within the scope of the color additives legislation.

Accordingly, we respectfully request that your committee provide for an exemption of pesticide chemicals in accordance with the amendment proposed by Mr. Noone in his testimony. In making this request, it is not our purpose in any respect to supersede Mr. Noone's testimony. Mr. Noone's statement that in his opinion this exemption could be accomplished satisfactorily by a letter was based upon the belief that such a letter expressing the clear intention not to regulate pesticide chemicals under this legislation would be sufficient to effectively remove them from its scope.

Mr. Noone's statement was based upon a recognition of the apparent satisfactory use of such a technique in connection with other legislation in the past but without familiarity with the principles stated in the recent Supreme Court decision previously cited. Nevertheless, in view of the circumstances discussed above, we believe that an express amendment specifically exempting these products from the legislation is justified.

Very truly yours,

L. S. HITCHNER,
Executive Secretary.

DEPARTMENT OF HEALTH, EDCATION, AND WELFARE,
Washington.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: It has come to my attention that two questions have been raised concerning the scope of the proposed color additives legislation now being considered by your committee (S. 2197 and H.R. 7624). Since these questions were not covered by my testimony on January 26, I am taking this opportunity of letting you have the views of our Department on them.

A representative of the packaging industry has expressed to us an apprehension that the Department's proposed legislation might be construed as applying to coloring materials used in food wraps and other food packaging materials even where the color does not migrate from the wrap to the food or, if there is migration, where it is so slight that it would cause no color in food discernible by the unaided eye.

It is our view that the color additives amendment would not apply to color materials in food wraps that do not migrate from the wrap to the food.

Additionally, it is our view that the bill is intended to regulate substances that color or are capable of coloring food to a degree apparent to the naked eye. Thus, a component of food packaging that migrated into food but did not change its color in the ordinary sense of the term would continue to be regulated, if necessary, under the food additives amendment and would not become subject to the proposed color additives bill.

The second question relates to presticide chemicals as defined in section 201(q) of the Federal Food, Drug, and Cosmetic Act. We are advised that certain fungicides used in fruit production have the effect not only of protecting the tree against plant diseases but also of affecting or supporting natural plant processes so the plant produces better color and finish in the fruit; and some

plant growth regulators, when applied to plants, likewise enhance the development of normal color in produce derived from them.

It is our view that pesticide chemicals used in this way are not color additives within the meaning of the proposed legislation and do not impart an artificial color to the raw agricultural commodities. Rather, they promote the development of the natural color of produce as a result of the normal physiological processes of the plant. The legislation which we drafted was not intended to apply to pesticide chemicals which enhance color by affecting or supporting natural plant processes and we would expect to continue to regulate pesticide chemicals, if the bill is enacted in its present form, under the pesticide chemicals amendment and not the color additive amendment.

Sincerely yours,

ARTHUR S. FLEMMING, *Secretary.*

NATIONAL AGRICULTURAL CHEMICALS ASSOCIATION,
Washington, D.C., April 14, 1960.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: We are submitting this letter and attachments as a supplement to our statement presented before your committee on January 29, 1960, relative to H.R. 7624 and S. 2197.

Our association has been seeking to insure that the proposed color additive amendments to the Federal Food, Drug, and Cosmetic Act (H.R. 7624 and S. 2197) might not be interpreted at some future date as being applicable to pesticide chemicals which are already specifically and adequately regulated under the pesticide chemicals amendment to the Federal Food, Drug, and Cosmetic Act (Public Law 518, 83d Cong.). We have been concerned about this possibility even though the wording and intent of the proposed color additive amendments and the legislative record thereon to date indicate that such products do not fall within the scope of the pending legislation. The Food and Drug Administration has expressed concurrence in this view.

We have been attempting to have the legislative record clearly show that pesticide chemicals when used for their normal purposes are not subject to the proposed color additives amendment. For this reason, the writer appeared before your committee on January 29, 1960, and presented testimony on the bills. Subsequently, Secretary of Health, Education, and Welfare Flemming filed with you a letter dated February 8 expressing views in agreement with the position taken by the writer in his testimony.

However, another technical point has been raised; namely, the incidental discoloration of produce which frequently occurs as a result of the use of pesticide chemicals. This matter has been discussed with representatives of the Food and Drug Administration, and again there is agreement that the proposed color additive amendments would not and should not be applicable to pesticide chemicals because of such incidental discoloration. However, the possibility that at some future date the legislation, if enacted, might be interpreted as applying to pesticide chemicals because of this discoloration has caused concern on the part of some individuals. We are attaching copies of the correspondence between our association and the Food and Drug Administration on this point. We believe that they should be inserted into the official record of the hearings on H.R. 7624 and S. 2197.

Accordingly, we respectfully request that you have inserted into the record the two letters which we are enclosing.

Your cooperation in this matter will be greatly appreciated.

Very truly yours,

J. A. NOONE.

NATIONAL AGRICULTURAL CHEMICALS ASSOCIATION,
Washington, D.C., March 29, 1960.

Hon. GEORGE P. LARRICK,
Commissioner of Food and Drugs, Department of Health, Education, and Welfare, Washington, D.C.

DEAR COMMISSIONER LARRICK: In connection with discussions relative to the proposed amendment clarifying the status of pesticide chemicals under H.R.

7624 and S. 2197, the proposed color Additive Amendments of 1959 to the Federal Food, Drug, and Cosmetic Act, some members of our legal and technical committees have called attention to a matter which they believe should be clarified in the legislative record on the bills. They have reference to what might be described as incidental and generally undesired discoloration of raw agricultural commodities by deposits of pesticide chemical residues of a different color than the produce.

A few examples will serve to illustrate what they have in mind. Some pesticide chemicals and formulations thereof have very definite colors and their spray deposits may discolor the treated raw agricultural commodities until the residues are removed by weathering, washing, brushing, or other means. Thus, ferbam and many of its formulations are black and form a visible film when applied to light-colored produce. Similarly, sulfur leaves a yellow deposit on many fruits and vegetables. Other examples could be cited. However, the discoloration problem is not restricted to a few pesticide chemicals. Most wettable powder formulations of the various pesticide chemicals will result in a visible deposit, usually off-white, on treated produce because of the clays, silicas, and similar inert materials used as diluents and carriers.

These residue films, whether white, black, or other color, are not intended to impart color to the treated produce and their effect may be properly described as discoloration. From the appearance standpoint, they are objectionable rather than desirable and are normally removed before the produce reaches the consumer through commercial channels.

The products are not used to impart an artificial color to the treated raw agricultural commodities. The residue films result from the use of the products for purposes such as insect or disease control or plant growth regulation.

We believe that the wording and intent of the proposed color additive amendments, H.R. 7624 and S. 2197, and the legislative record thereon to date, clearly indicate that such incidental discolorations resulting from the normal use of pesticide chemicals on raw agricultural commodities, and which are normally removed before the produce reaches the consumer, would not have the effect of classifying pesticide chemicals as color additives under the pending legislation. However, in order to avoid any future questions or uncertainties on this point, we believe it desirable that it be clarified at this time.

Accordingly, we would greatly appreciate a statement of your concurrence in this interpretation and conclusion, and trust that we may hear from you shortly.

Your cooperation in this and past matters is gratefully acknowledged.

Very truly yours,

J. A. NOONE.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
FOOD AND DRUG ADMINISTRATION,
Washington, D.C., April 11, 1960.

Mr. J. A. NOONE,
National Agricultural Chemicals Association,
Washington, D.C.

DEAR MR. NOONE: This replies to your letter of March 29, 1960, with regard to pending color additives legislation.

You cite examples in which pesticides or pesticide formulations, used solely for purposes other than coloring, may leave deposits that discolor the crops.

It is not our purpose to subject such materials to the clearance procedures of the proposed color additives amendment.

In case any question arose on this point, we would have the authority under the proposed section 201(t) of the Federal Food, Drug, and Cosmetic Act (sec. 101 of H.R. 7624) to issue a regulation carrying forward this position.

However, it is our intent to interpret the color additives bill as applying to any pesticide chemical or formulation whose use enhances the color of treated produce by means other than natural metabolic plant processes.

Sincerely yours,

GEORGE P. LARRICK,
Commissioner of Food and Drugs.

(Whereupon, at 11:50 a.m., the hearing was recessed, to reconvene at 10 a.m., Wednesday, February 10, 1960.)

COLOR ADDITIVES

WEDNESDAY, FEBRUARY 10, 1960

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The committee met, pursuant to recess, at 10 a.m., in room 1334, New House Office Building, Hon. John Bell Williams presiding.

Present: Representatives Williams, Roberts, Rhodes, O'Brien, Rogers of Florida, Hemphill, Brock, Younger, Avery, Glenn, Nelson, Keith, and Curtin.

Also present: W. E. Williamson, chief clerks.

Mr. WILLIAMS. The committee will come to order, please.

Our first witness this morning as we continue our hearings on additives legislation is Mr. H. E. Dunkelberger, Jr., representing the National Canners Association.

STATEMENT OF H. E. DUNKELBERGER, JR., ON BEHALF OF NATIONAL CANNERS ASSOCIATION

Mr. DUNKELBERGER. My name is H. E. Dunkelberger, Jr., and I am appearing on behalf of the National Canners Association, which is a nonprofit trade association with 650 members canning in 48 of the 50 States and the territories.

Members of the association, including both independent canning companies and cooperative canning enterprises, pack approximately 75 percent of the entire national production of canned fruits, vegetables, specialties, meat, and fish.

Initially, it should be emphasized that the canning industry is not as directly concerned with the use of artificial color additives as some other segments of the food industry. The large bulk of canned goods consists of products taken from the field, the orchard, or the sea, cleaned and prepared for processing, perhaps seasoned lightly with the addition of little else than salt or sugar, hermetically sealed, and sterilized by heat.

As in the case of other food additives, artificial colors are used by the canning industry for only a small part of its production, and are restricted primarily to specialty products, such as maraschino cherries in fruit cocktail and mint-flavored jellies.

In fact, the great preponderance of canned fruits and vegetables are covered by standards of identity under the Federal Food, Drug, and Cosmetic Act, which with few exceptions do not provide for the use of added color as an optional ingredient.

Nevertheless, the National Canners Association feels obliged to present its views on the proposed color bills. So that the record will be

entirely clear on the association's historic position on food regulation and consumer protection, we have included in our formal statement a resolution adopted by our membership a few weeks ago at its annual convention. This resolution outlined the mutual cooperation that has long existed between the National Canners Association and the Federal Food and Drug Administration on administrative, technical, and legislative matters, and affirmed that the association continues to subscribe to the established policies of mutual trust, confidence, and full cooperation.

In view of this long established relationship, the canning industry has concerned itself with every significant amendment to the Food, Drug, and Cosmetic Act. Even though the regulation of added colors would not seriously affect canned products, the National Canners Association feels that industry and the public have a vital stake in the existence of a Federal agency whose administrative and enforcement powers are adequate to assure public safety, and yet remain consistent with long accepted principles of democratic government. Far-reaching Government controls may be necessary in some instances to protect the public health, but this does not mean that such controls must be indiscriminately applied, and without recognition of the responsibility Government has to deal with private citizens fairly in accordance with the traditional tenets of a free society.

Although the canning industry did not expect to be seriously affected by the changes in the Federal act made by the Food Additives Amendment of 1958, the National Canners Association for many years strongly supported the principle of that legislation. Just as vigorously, however, it opposed certain of the provisions contained in many of the proposed bills, on the ground that they were unnecessary for the accomplishment of the desired objective. It is unnecessary at this time to detail the nature of those objections, but I am certain the committee will recall the controversies over functional value, the licensing concept, advisory committees, and limited judicial review.

The food additives amendment as finally passed contained a number of compromises on these very points. This association, along with most other elements of the food industry, joined with the FDA in supporting the final version of the bill, in recognition of the fact that a pretesting system for food additives could become effective only through the acceptance of some compromises.

There have, of course, been many problems in the implementation and administration of this food additives amendment, but there is no challenge to the fact that it will prove entirely adequate to assure consumers of the safety of all food ingredients. Indeed, Secretary Flemming has made it clear in testifying before this committee that with the exception of minor changes concerning the use of new drugs that may become food additives, the food additives section needs no further amendments.

It thus appears that the sole justification for further legislation in the food area arises from the special circumstances surrounding the use and approval of coal tar colors. All other colors used in foods are, of course, covered by the provisions of the food additives amendment, and are therefore subject to the same pretesting and licensing requirements as other food additives.

We recognize that the problems raised by the Food and Drug Administration's interpretation of the coal tar color provisions, as af-

firmed by the Supreme Court, present serious difficulties concerning the use of coal tar colors that have now been, or in the future may be, delisted because they are not absolutely harmless.

In addition, we see no reason why industry should not share the responsibility of pretesting new coal tar colors, as it must with other new food additives. Every consideration militates in favor of legislation to provide for the use of coal tar colors under a system of pretesting, tolerances, and licensing for use.

We do not understand, however, why such legislation should not be drafted to conform to the provisions of the food additives amendment, which were worked out after years of study and debate, and which are proving successful in operation. It is difficult to conceive why the safeguards and procedures outlined in the food additives amendment are adequate for all other substances, and not for color additives. If there is no question as to the adequacy of the food additives amendment, then it would appear wise to extend the principle of that amendment to those substances not now covered; namely, coal tar colors. The retention of the long-established batch certification procedures for coal tar colors, however, might be a justifiable modification of that principle.

The National Canners Association believes that S. 2197 and H.R. 7624, as now drafted, go far beyond the announced objectives they are purportedly designed to attain. They would grant, as the chairman pointed out on the first day of the present hearings, "enormous authority to a Federal agency." They would broaden the licensing concept to many substances long recognized as safe for use, and concerning which no question of safety has been raised. And they would incorporate into a measure designed to assure public safety, tests that have nothing to do with safety.

I would like to outline, if I may, the objections we have to specific provisions of these bills.

In our view, the most serious defect in S. 2197 and H.R. 7624 is the all-encompassing scope of substances that would be covered. The broad, virtually unlimited, definition of color will include within the coverage of this legislation many substances specifically exempted in the Food Additives Amendment of 1958.

In enacting that amendment, Congress decided that licensing of all food ingredients would not only result in a tremendous economic waste in time and expense, but would be contrary to the principle that regulatory controls should be limited to those necessary to achieve the desired result.

Mr. KEITH. Excuse me, Mr. Chairman.

Mr. Witness, if I may, I have a question I would like to ask you and those present today. This legislation has to be implemented by the Food and Drug Administration and it is very important they understand the industry's problems and points of view. Great difficulty sometimes results from the inadequate knowledge on the part of the administration in that area.

So I would like to have you ask the witness, Mr. Chairman, I would like to have you ask whether there is anybody present from the Food and Drug Administration here?

Mr. WILLIAMS. That is a good question. Is there a representative of the Food and Drug Administration here?

Mr. FREEMAN. Kenneth A. Freeman. I am Deputy Director of the Division of Cosmetics, in which certification of colors operates.

Mr. WILLIAMS. Do you have any jurisdiction over the field of food additives?

Mr. FREEMAN. Just color additives.

Mr. WILLIAMS. Just color additives in connection with food, also?

Mr. FREEMAN. Yes, sir.

Mr. WILLIAMS. Food and cosmetics?

Mr. FREEMAN. Food, drugs, and cosmetics.

Mr. WILLIAMS. All right.

Mr. KEITH. Thank you, Mr. Chairman.

Mr. WILLIAMS. Proceed.

Mr. DUNKELBERGER. Congress recognized that thousands of foods and food ingredients had, through long use, proven themselves to be safe beyond question. It therefore limited the licensing requirements of the amendment to substances concerning which no such proof existed. Ingredients generally recognized as safe, or those which had received a prior approval, were thus exempted from coverage.

It is now proposed to reverse this considered congressional judgment with regard to one category of substances, and to require that all substances that impart color to foods be pretested and licensed, even though no question of safety exists concerning those substances. The all-inclusive definition of color in the bills would presumably include any ingredient that contributes to the color of a final product, unless the Secretary determines that the ingredient is used "solely for a purpose or purposes other than coloring."

The bill thus requires that the Secretary make an extremely controversial determination as to the purpose for which an ingredient is used, that has nothing to do with safety or public health. If he determines that one of the purposes of an ingredient in use for many years is to impart color, the ingredient is automatically covered and must be licensed for use. If he determines by regulation that the purposes for which the ingredient is used are entirely other than to impart color, then no licensing is required.

This fine distinction, unrelated to factors of safety, and depending on undefined questions of intent—whose intent, is not made clear—will be of very significant consequence to the manufacturer.

Some have said that those color additives which have long been recognized as safe will easily be cleared under these proposed bills. Such statements ignore the fact that these substances must nevertheless be pretested in the same way as the most seriously suspected additive. Even though there is no doubt as to the safety of the substances, the cost and delays will still be present, and it should be emphasized, once again, that cost and delay is just one objection. The principal objection is to any regulation by Government that is not acknowledged as necessary to accomplish the desired result.

This question of the scope of legislation could be effectively resolved, we feel, be revising the bill in several respects. The definition of "color additive" should be changed to accord with the definition of "artificial coloring" in section 1.12 of the FDA regulations. We recognize that any attempt to limit the bill to coal-tar colors would lead to extremely difficult problems of definition. The bill can be limited, however, to those substances that manufacturers, consumers, and the FDA recognize as artificial or synthetic colors.

In this way, no questions will arise as to whether natural products—such as beet juce or tomato sauce—are subject to the licensing requirements. Furthermore, any substance not included within the definition will, of course, be covered by the safeguards of the food additive amendment.

A second change to the definition of "color additive" would be to revise the "except" clause to read:

> Except that such term does not include any material which is used primarily for a purpose or purposes other than coloring.

Again, it is clear that any substance excluded under this clause will be adequately covered by the food additives amendment. Rather than rest this determination on a positive finding by the Secretary as to whether a substance is used "solely for a purpose or purposes other than coloring," the limitation is made a part of the definition, and is phrased to preclude tenuous judgments when coloring is at most a side or secondary effect.

In addition to these changes designed to limit the bill to substances that are properly included within the term "color additive," the bill should be revised further to exclude from coverage substances concerning which no question of safety exists. This could be accomplished by adding a provision to the "except" clause, which would provide that the term "color additive" would not include a substance generally recognized, among experts qualified by scientific training and experience to evaluate its safety, as having been adequately shown through scientific procedures or common use to be safe under the conditions of its intended use. As pointed out above, there is no justification for submitting admittedly safe substances to the pretesting and licensing requirements of the bill.

A second serious defect in the bills is that although every justification given for the proposed comprehensive Government control is that the public must be protected from potentially dangerous ingredients, they include provisions under which the Secretary is authorized to make economic determinations, having nothing to do with the question of safety.

Section 706(b)(1) would provide that color additives may be listed for use if such additives are "suitable and safe" for such use. Section 706(b)(5) would provide specific tests for determining whether a color additive is safe, but no definition is given for the term "suitable," which ostensibly has a meaning apart from the safety of the additive in question.

It is not at all clear why the comprehensive licensing procedures here proposed should be extended beyond factors of safety to some vague, undetermined questions of suitability.

In this same connection, section 706(b)(6) would provide that a color additive shall not be listed if the Secretary finds that a proposed use—

> would promote deception of the consumer in violation of this Act or would otherwise result in misbranding or adulteration within the meaning of this Act.

The National Canners Association opposes any attempt to write into a licensing measure based on protecting the public health, collateral methods for advance administrative enforcement, without conventional prosecution, of the economic misbranding and adulteration provisions of the basic act.

In section 706(b)(6), however, it is proposed that determinations of deception and misbranding should be made at the administrative level, subject only to court review of a paper record, with a strong presumption in favor of facts found by the FDA. Although there are acknowledged reasons for pretesting and clearance procedures when safety is at issue, we see no justification whatsoever for the extension of administrative licensing methods to questions of deception.

A fundamental policy of English and American law has been to enforce the proscriptions and requirements of statutes by leaving the individual free to act, subject to court enforcement action, with the burden of proof on the Government to establish a violation. Prior governmental approval has long been regarded as basically in conflict with the traditions of a democratic society, and justified only in the face of a convincing showing that public safety requires it. No such showing has been made to date with regard to deceptive use of color.

Related to this proposal that would make apprehensions of possible economic violations a factor in the licensing of color additives, is section 706(b)(7), which provides for a determination to be made by the Secretary whether a color additive "would achieve the intended physical or other technical effect," and authorizes him to set tolerances at a level no higher "than he finds to be reasonably required to accomplish" this effect. Here again the Secretary's determination involves something other than safety.

This association firmly believes that whether or not a color achieves its intended effect is not a question to be properly decided by a Federal agency under a licensing system. Safety alone should determine whether a color may be used and at what levels. Beyond that, it is for the manufacturer and the consumer to decide in their own minds whether "the intended physical effect" is achieved, subject only to the long-accepted sanctions of seizure, injunction, or criminal prosecution when an adulteration or misbranding can be established in a court of law.

A third serious defect in the proposed bills is the comprehensive system of provisional listings, under which the Secretary would have virtually unlimited powers, without the safeguards of hearings, findings, and judicial review. Indeed, serious constitutional questions might be raised concerning congressional authorization of a system of government regulation of private industry without such safeguards.

Under this provisional licensing procedure, color additives now in commercial use would be provisionally listed for use, but the Secretary would be authorized to establish tolerances for or to delist these additives "forthwith," when "necessary to protect the public health."

In addition, he would be authorized to determine whether a color had been used prior to the enactment, and the levels at which it had been used.

Some of these controls are necessary to a system of provisional listing, but the Secretary is charged with a grave responsibility: On one hand, he must see to it that color additives are not used in such a manner as to endanger public health; but on the other hand, he must exercise this authority only to the extent necessary to accomplish that

result. Clearly, any restrictions on private industry going beyond what is required in the interest of public health would be totally uncalled for, and would not be authorized by the act.

In spite of this authority that would be granted to the Secretary, and his responsibilities to the public and industry in exercising that authority, the proposed bills do not provide for any of the safeguards long thought necessary in a democratic form of government. Section 203(d)(2)(A) provides that "regulations under this section shall, from time to time, be issued, amended, or repealed by the Secretary without regard to the requirements of the basic act. * * *"

The effect of this provision is to eliminate the need for publication, notice, comments, objections, hearings, findings, and judicial review.

This association and its canning members believe that section 203(d)(2)(A) is contrary to all concepts of sound legislation, good government, constitutional requirements, fair procedure, and due process of law. We do not understand why such a provision was thought to be necessary. Surely the public health can be adequately protected without complete disregard for all procedural safeguards. Even if the unlikely situation arises where newly discovered evidence discloses that a long-used additive must be removed from the market in the interest of public safety, the regulatory procedures outlined in the basic act could be used, supplemented, if necessary, by public announcement, seizure, restraining order and injunction.

We propose, therefore, that section 203(d)(2)(A) of the bills be changed to accord with proposed section 706(d), which makes applicable the procedural provisions of section 701 of the basic act, as modified by the standard of judicial review in the food additives amendment.

At this point I would like to add to our statement that we agree with the suggestion which we understand will be made by another witness today that proposed section 203(d)(3) be eliminated. That provision is entirely unnecessary once procedural safeguards are included, and we feel its ambiguity can only confuse and interfere with the proper functioning of the provisional listing procedures.

In summary, then, the National Canners Association urges the enactment of a color additive bill similar in scope to the Food Additives Amendment of 1958.

We feel this can be effectively achieved by a series of revisions in H.R. 7624 or S. 2197:

1. Redfine "color additive" to mean those substances that are "artificial colorings" as defined in the current FDA regulations under section 403(k), except that the term shall not include substances used primarily for purposes other than coloring, or substances generally recognized as safe for use. All ingredients used in foods that are not covered by this definition would have to meet the tests provided in the food additives amendment.

2. Remove all references to economic determinations by the Secretary, and limit the bill to the question of public health. This would involve:

(a) The removal of the term "suitable" throughout the bill;
(b) the elimination of proposed subsection 706(b)(6); and
(c) the elimination of subsection 406(b)(7).

Economic adulteration and misbranding violations would, of course, remain subject to the traditional sanctions of the basic act.

3. Provide procedural safeguards for provisional listing, by changing section 203(d)(2)(A) to conform to section 706(d).

If these few, but necessary, changes are made, we believe that the resulting bill would accomplish all of the acknowledged objectives of the legislation, and would assure the consumer of the safety of color additives used in foods, drugs and cosmetics.

Mr. WILLIAMS. Does that complete your statement?

Mr. DUNKELBEFGER. Yes, sir.

Mr. WILLIAMS. Thank you very much.

Mr. Younger, do you have any questions?

Mr. YOUNGER. Yes; I do, Mr. Chairman.

Where you use the expression "generally recognized as safe," would that be more inclusive than where you say it has been generally used over a period of years?

Mr. DUNKELBERGER. No, sir. When we talk in terms of general use over a period of years, that is just a shorthand way of referring to a provision in the act that would cover general recognition of safety.

As I understand it, the general recgonition of safety clause in the food additives amendment does not apply to all substances that were used prior to the enactment of the act but only to those substances which scientists and experts qualified to judge could say were generally recognized as safe.

We would merely take that same test, the general recognition of safety provision, which is now in the food additives amendment and put it in the color bill.

Mr. YOUNGER. In other words, you would not have the test as having been used?

Mr. DUNKELBERGER. No, sir. The only test would be whether the substance was generally recognized as safe; and in two ways that could be established; having been shown by scientific procedures to the satisfaction of experts, or through common long use, either one.

Mr. YOUNGER. You are proposing that even a new color additive that has never been used in the canning industry at all, could be used without the approval, provided you could furnish satisfactory evidence, scientific evidence, that it is safe?

Mr. DUNKELBERGER. I do not believe it would work that way, Mr. Congressman.

As I understand the FDA's operation of the general recognition of safety clause, they circulate a larger number of experts in the field and ask them if in accordance with their knowledge, this substance can be regarded as generally recognized as safe. I do not think they feel that it could be applied to new additives, and we would agree I believe with that position. A new substance developed after the enactment of the act—just by the fact that none of the experts would have known about it—could not be regarded as generally recognized as safe. All new substances after the enactment of the act would, in order to qualify, have to be subject to the pretesting and licensing procedures in the bill.

Mr. YOUNGER. Your paper does not make that definition as certain as I would have liked to have seen it.

Now, your concern about the power of the Secretary to issue rules and regulations without hearings, and so forth. Is it your feeling that this act, as drawn, removes it from the Administrative Procedure Act?

Mr. DUNKELBERGER. Well, that is a question that ultimately will have to be determined, I guess, when someone challenges it in court. The cases interpreting when judicial review has been withdrawn, under the terms of the Administrative Procedure Act, go in a million different directions.

In the provisional listing section, the term is—

regulations shall be issued without regard to the requirements of the basic Act.

Now, whether that would be interpreted by a court as saying it is meant that no judicial review would be available, is questionable. We feel that since even the permanent listing in this bill, Food Additives, Pesticide Chemicals, and all of the other regulations issued by the Food and Drug Administration are covered by specific procedures, these same procedures should be applied in this one section, the provisional listing section.

That would then——

Mr. YOUNGER. That question was asked of Mr. Flemming when he was before the committee.

Mr. DUNKELBERGER. Yes, sir.

Mr. YOUNGER. And certainly it was his interpretation and the interpretation of the Department that in no way did this bill take the color additives outside of the Administrative Procedure Act. Would you be satisfied with the Administrative Procedure Act in regard to regulation?

Mr. DUNKELBERGER. Mr. Congressman, I understood the Secretary to say that if the procedures were not provided in the provisional section, he would not be opposed to them being included in the section. He pointed out that the permanent listing has the same procedures that Food and Drug has operated under since 1938 and perhaps before, and that he would go along with including those procedures in the provisional listing section.

I did not understand him to say that he would leave the provisional listing to be covered by the Administrative Procedure Act. We would prefer that any question of ambiguity be resolved in favor of certainty. If it is felt that the APA would apply, we cannot see why there would be any objection to a specific provision providing for procedures for notices and hearing and judicial review, which has been included in all other amendments to the act.

Mr. YOUNGER. That is all, Mr. Chairman.

Mr. WILLIAMS. Mr. Rogers.

Mr. ROGERS of Florida. Mr. Chairman, I thought the statement was a very excellent one and has brought up some points that I think we have not yet considered. I think the point you make about the purpose is probably well made that we should go into it.

In carrying on the discussion that you have just had with Congressman Younger, it is my recollection that the Secretary stated that under the provisions, as the bill is now drawn, it would be possible, for instance, for them to delist anything without any hearing at all, although it might be subject to judicial review later on. There would be no requirement for a hearing, and he said he would have no objections to that being applied to this act.

So I think probably that could be remedied without too much trouble.

That is all I have, Mr. Chairman.

Mr. WILLIAMS. Mr. Avery.
Mr. AVERY. No questions, Mr. Chairman.
Mr. WILLIAMS. Mr. Brock.
Mr. BROCK. No questions, Mr. Chairman.
Mr. WILLIAMS. Any other questions?
Thank you very much, Mr. Dunkelberger.
Mr. DUNKELBERGER. Yes, sir.
Mr. WILLIAMS. The next witness is the Honorable James A. Haley, Member of Congress from the State of Florida. Mr. Haley, we will be glad to hear you.

STATEMENT OF HON. JAMES A. HALEY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF FLORIDA

Mr. HALEY. Mr. Chairman and gentlemen of the committee, in view of my previous appearance before this committee and the introduction of special legislation for the purpose of allowing the certification of Citrus Red No. 2, this committee is well informed of my intense interest.

It has been clearly established that the coloring of oranges is an economic necessity and the color used has been thoroughly tested with reference to cancer, as well as to whether it is safe otherwise, and its safety has been determined as to all factors. It is now being listed and certified under the special legislation passed.

My chief interest is to see that this listing is not disturbed and that the regulations are such that at all times there shall be an adequate, safe color for the use of the citrus industry. The record clearly shows and statements by Dr. Larrick and the Secretary also show that the ethylene method and the use of Citrus Red No. 2 is safe, and that neither Citrus Red No. 2 nor the ethylene method promote deceit, and that the ethylene method is not covered under the definition of "food additives." We also understand that there has been assurance of immediate listing of Citrus Red No. 2 under the provisions of this act. If it is thought an amendment is necessary to assure this, I respectfully urge that the bill be amended to so include. The continued, uninterrupted use of the coloring of oranges is absolutely necessary. During the period when there was no color listed and coloring was not allowed in Canada, shipments of fresh fruit were reduced by more than half.

I wish to thank the committee for its previous help in our problem and stand ready to furnish any further information which the committee may desire.

Mr. WILLIAMS. The committee has received a communication for insertion in the record at this time, one which I think perhaps would be of particular interest to the committee, and also the public, and I want to take the liberty at this time of asking the clerk if he will read that for the information of the committee.

Mr. WILLIAMSON. Mr. Chairman, this letter is from the Health, Education, and Welfare Department, dated February 8, 1960:

DEAR MR. CHAIRMAN: It has come to my attention that two questions have been raised concerning the scope of the proposed color additives legislation now being considered by your committee (S. 2197 and H.R. 7624). Since these questions were not covered by my testimony on January 26, I am taking this opportunity of letting you have the views of our Department on them.

A representative of the packaging industry has expressed to us an apprehension that the Department's proposed legislation might be construed as applying to coloring materials used in food wraps and other food packaging materials even where the color does not migrate from the wrap to the food or, if there is migration, where it is so slight that it would cause no color in food discernible by the unaided eye.

It is our view that the color additives amendment would not apply to color materials in food wraps that do not migrate from the wrap to the food.

Additionally, it is our view that the bill is intended to regulate substances that color or are capable of coloring food to a degree apparent to the naked eye. Thus, a component of food packaging that migrated into food but did not change its color in the ordinary sense of the term would continue to be regulated, if necessary, under the food additives amendment and would not become subject to the proposed color additives bill.

The second question relates to pesticide chemicals as defined in section 201(q) of the Federal Food, Drug, and Cosmetic Act. We are advised that certain fungicides used in fruit production have the effect not only of protecting the tree against plant diseases but also of affecting or supporting natural plant processes so the plant produces better color and finish in the fruit; and some plant growth regulators, when applied to plants, likewise enhance the development of normal color in produce derived from them.

It is our view that pesticide chemicals used in this way are not color additives within the meaning of the proposed legislation and do not impart an artificial color to the raw agricultural commodities. Rather, they promote the development of the natural color of produce as a result of the normal physiological processes of the plant. The legislation which we drafted was not intended to apply to pesticide chemicals which enhance color by affecting or supporting natural plant processes and we would expect to continue to regulate pesticide chemicals, if the bill is enacted in its present form, under the pesticide chemicals amendment and not the color additives amendment.

Sincerely yours,

ARTHUR S. FLEMMING, *Secretary.*

Mr. WILLIAMS. Thank you very much.

I believe the next witness is Mr. Paul Gerden.

STATEMENT OF PAUL GERDEN, GENERAL COUNSEL AND SECRETARY, ABBOTT LABORATORIES; ACCOMPANIED BY EDWARD J. MATSON, DIRECTOR OF SCIENTIFIC ADMINISTRATION

Mr. GERDEN. Mr. Chairman, I am secretary and general counsel of Abbott Laboratories; and I would like to introduce my associate, Edward J. Matson, director of scientific administration for Abbott Laboratories.

Mr. WILLIAMS. Would you like to have him sit with you?

Mr. GERDEN. I would like to have him sit with me, sir, if you have no objection.

Mr. Chairman, Abbott Laboratories appreciates this opportunity to present to you its views on proposed color additive legislation. The extreme importance of this legislation derives not only from the public health protection it seeks to insure but also from its impact on the very wide segment of American industry that is now and will be affected by the regulation of colors for use in foods, drugs, and cosmetics.

Abbott Laboratories' particular interest in this legislation is not that of a producer of color additives, but that of a pharmaceutical user, to which the variety, safety, and effectiveness of available colors is a matter of great commercial and medical concern. Abbott Laboratories is a major producer of a wide line of pharmaceutical products, most of which are sold through pharmacists on doctors' prescriptions,

with some being sold on an over-the-counter basis. Abbott's line of products contains over 600 preparations for the prevention, alleviation, and cure of diseases and the improvement of health.

As a pharmaceutical manufacturer, Abbott finds it necessary to use color additives, not only for esthetic purposes and for the purpose of consumer appeal, but also for reasons directly associated with the treatment of human illness. The addition of color is sometimes desirable for its psychological effect on the patient.

This is true, for example, in children's medication, and in many other cases. Color is necessary in some cases to provide a uniform hue to compounded medicines and to make certain drugs more palatable to the consumer. It may be desirable for its cosmetic effect. Of particular importance is the necessity for the use of added colors in pharmaceutical preparations to achieve rapidity and certainty of identification. Color may indicate source of a product as well as a standard of identification, and is useful to the consumer as well as to the physician and the pharmacist.

One example is the necessity of color to distinguish between a number of pills which must be taken concurrently. Accordingly, the availability of an adequate supply of effective color substances is an important factor in consumer safety in this field.

As stated in the "Explanation of Principal Features and Purposes of Proposed Color Additive Amendments of 1959," which was enclosed with the letter of May 29, 1959, from Secretary Flemming to the Speaker of the House:

> In drugs, color additives are much used for ready identification, thus helping the pharmacist, the physicians, the nurse, and the patient to avoid dangerous mistakes in choosing the wrong bottle or box.

The same document points out that, in the interest of the consumer, an adequate supply of colors of assured safety should be made available. We believe that the public interest, therefore, justifies restrictions on the use of color in drugs only when reasonably related to public health. We support the principle—and in many respects the terms—of the proposed legislation, particularly S. 2197, but we wish to point out several areas in these bills where we believe they do not reasonably serve the public interest.

In the case of all of my comments, I would like to emphasize that our views have been developed in full recognition of the paramount need for protecting public health from any hazards that might be created by the use of color additives.

At the same time, however, it has seemed to us, in our review of the proposed legislation, that some of its provisions are not directed toward promotion of the public health and safety but impinge, rather, upon areas of economic freedom and commercial judgment, or are otherwise unrelated to any reasonable public health needs. It is in this latter respect that we very strongly feel that the legislation requires modification.

If I may, I wish to start with the listing provisions of the proposed bills. These are found in the proposed new section 706(b) to the Federal Food, Drug, and Cosmetic Act, commencing on page 7 of H.R. 7624 and page 8 of S. 2197.

First, I would like to make a brief reference to the difference between the Senate bill, S. 2197, and the House proposal, H.R. 7624,

with respect to their requirements concerning analytical methods for color additives. It is my understanding that the Department of Health, Education, and Welfare has indicated that it has no objection to the way in which this matter is dealt with in proposed section 706(b)(5)(D) of the bill that passed the Senate last session. We urge that this committee accept the resolution of this problem adopted in the Senate.

Second, both S. 2197 and H.R. 7624 contain provisions authorizing the Secretary to decide in advance economic questions unrelated to public health and safety. Thus, section 706(b)(1) states that color additives may be listed for use if they are "suitable and safe" for such use.

The word "suitable" also appears elsewhere in section 706(b). Nowhere does either bill indicate how the Secretary is to determine whether a color additive is "suitable." If this adjective connotes something other than safety, it is undesirable in this legislation. If it refers only to safety factors, it is redundant.

Similarly, section 706(b)(7) provides that the Secretary shall not list an additive for a particular use unless he thinks that the additive, if used within a safe tolerance, "would achieve the intended physical or other technical effect." This section also provides that the tolerance limitation to be set should be no higher than that believed by the Secretary "to be reasonably required to accomplish the intended physical or other technical effect."

In our view, these provisions are also wholly unnecessary and completely undesirable. The word "suitable," should, in our opinion, be deleted from sections 706(b)(1) and the other paragraphs, and the entire section 706(b)(7) should be deleted from this legislation.

These provisions introduce a kind of functional value test that has no proper place in a public health measure.

I recognize that a provision similar to section 706(b)(7) is found in the Food Additives Amendment of 1958. But whatever may be said to support the inclusion of such a provision in the regulation of food additives designed to achieve a myriad of functional purposes, there seems to us no conceptual justification for its adoption in color additive legislation.

The intended "physical" or "technical" effect of a color additive is to impart color. Whether or not that color is a desirable one is a question to be determined in the first instance by the manufacturer and, in the final analysis, by the consumer. It requires no administrative prejudgment of any complex question of utility.

Third, the next section of the law, proposed section 706(b)(8), seems to us to confer upon the Secretary vast power to decide which articles are marketable and which are not, and to decide which industry needs a color and which does not, and to change his mind from time to time without any recourse from the industries affected or from the hapless consumer. In our society, such decisions of economic preference belong solely to the interaction of buyers and sellers in the marketplace.

Under subsection (A) of the provision as proposed, however, the Secretary would be charged with allocating an allowable tolerance for a color on the basis of such commercial criteria as the relative marketability of the articles involved, and the relative dependence of

the industries concerned upon the color. Moreover, the section as worded would permit the Secretary to revoke a tolerance previously granted for a particular coloring use in favor of some subsequent applicant for a purpose which, in the Secretary's sole judgment, is more desirable.

A tolerance for a particular use once allowed should not thereafter be canceled and allocated elsewhere unless the use of the color substance for that purpose is voluntarily abandoned. Indeed, the revocation of a listing for a particular use—because the Secretary thinks some new proposed use may be more deserving—could subject drug manufacturers, whose marketing programs had been developed in reliance on a color's continuing availability, to serious financial loss. Any decision as to the relative importance of proposed uses or as to how badly particular industries may need a coloring substance are matters, in our opinion, beyond the competence of a public health agency.

Accordingly, the specific changes which we advocate in this respect are set forth in the chart which is attached to this statement. And I might add, parenthetically, the chart which is attached covers all the changes which we are suggesting.

Fourth, I would like to direct attention to the cancer clause contained in section 706(b)(5)(B) of H.R. 7624.

In our opinion, cancer should not be singled out for special legislative attention distinct from the many other diseases that afflict mankind. The Secretary is given adequate authority under the general provisions of the proposed color additive legislation to prohibit the use of color additives that present actual cancer hazard.

We recognize, however, the many pressures created by the widespread fear of this dread disease. It is no doubt for this reason that a number of witnesses before your committee, in addition to advocating the elimination of the clause from H.R. 7624, have proposed in the alternative its modification to alleviate the serious administrative difficulties that have developed from the interpretation of the clause in the food additives amendment.

In considering our own position as to the minimum acceptable modification to the cancer clause as proposed in H.R. 7624, we have taken into account the fundamental premise of Secretary Flemming, as stated at page 63 of the transcript, that—

> * * * no one knows how much or how little of a substance will induce cancer when added to the diet of man if it has been demonstrated that it will induce cancer when added to the diet of a test animal.

This statement by the Secretary is attractive in its simplicity, but it is too simple. It is not a valid reason for opposing all modifications to the cancer clause.

For example, it does not distinguish between substances which directly cause cancer and those which at known levels lead to conditions which in turn may cause cancer. In the latter case, science is capable of recognizing a threshold below which the cancer-causing condition will not be created. The remoteness of a substance from carcinogenesis should be taken into consideration in the evaluation of scientific data on chemical substances.

An illustration of this distinction is potassium arsenite, referred to by the Secretary at page 22 of the transcript as a known carcino-

gen. Potassium arsenite is itself an admittedly toxic substance long used in large doses for humans under medical supervision. It is true, as the report of the Subcommittee on Carcinogenesis of the Food Protection Committee of the National Research Council states, that potassium arsenite has been "associated with cancer" in man.

However, the same report indicates that there is no adequate evidence that this substance has induced cancer in experimental animals. Its association with cancer in man derives entirely from reports in the medical literature of some cases in which massive long-term potassium arsenite therapy produced a characteristic thickening of the skin of the palms of the hands and the soles of the feet, and abnormal pigmentation of the skin. These patches of thickened skin eventually became cancerous. It is thought by scientists that about 20 percent of those who show skin thickening may develop cancer.

In other words, potassium arsenite is sometimes the proximate cause of skin thickening, which is medically termed hyperkeratosis, but only when administered at so high a level of ingestion that it is essentially arsenic poisoning. It is the hyperkeratosis which is the presumed cause of cancer. But a threshold level for potassium arsenite may readily be established below which no hyperkeratosis will be caused.

Thus, though it may be assumed that no threshold level can be established for direct carcinogenic action, safe levels can be determined for substances that are not in or of themselves carcinogenic. Therefore, we feel that the cancer clause should be modified at the very least to apply only to substances which proximately induce cancer. The term "proximately" should be added to the law.

Furthermore, we think the cancer clause should be revised to make clear that it is applicable only when data establish reliably that a substance has caused cancer. This clarification is necessary because experience under the food additives amendment indicates a disposition on the part of the Food and Drug Administration to apply the cancer clause contained therein to compounds not shown to induce cancer.

A specific example of this misapplication involves a number of organic arsenical compounds which, since 1951, have been widely used in animal feeds. Though chemically related, these organic compounds have chemical attributes that differ from those of inorganic forms of arsenic such as potassium arsensite. The organic arsenicals have contributed importantly to the efficiency of food production and to lower costs of food production by helping to insure survival and top condition of food animals from birth to market.

Some of these compounds have for years been considered by the Food and Drug Administration as generally recognized as safe under the conditions of their use. Because of their safety, certain organic arsenicals are exempt from the food additives amendment when used as the sole medicament and in some medicated combinations in animal feeds.

The Food and Drug Administration, however, has taken the position that the cancer clause does not permit it to grant additional clearances for any organic arsenical, and, therefore, in those limited situations where its approval is necessary, it has refused to grant any application or petition for any product containing an organic arsenical as an ingredient.

Yet there is absolutely no evidence that any organic arsenical compound has ever induced cancer in man or animal, despite widespread use and despite extensive animal experimentation. The Food and Drug Administration admits that it has not been demonstrated that all arsenic compounds are carcinogenic, but contends only that certain inorganic arsenic compounds, such as potassium arsenite, produce cancer in man, and that their chemical relationship to organic arsenicals raises a question as to whether these compounds may cause cancer.

The position of the Food and Drug Administration, as stated in an official letter, is:

> * * * our scientific advisers cannot say that arsenic compounds (referring to organic arsenicals) used in feed * * * are safe until it is demonstrated that such compounds do not have this carcinogenic potential.

Thus the statutory language contained in the cancer clause has been administratively distorted to require manufacturers to attempt to prove that a compound which has not been found to induce cancer in fact cannot cause cancer. This is not possible to prove scientifically.

In other words, as the cancer clause in the food additives amendment has been interpreted, any substance can be rendered suspect on the basis of inconclusive reports, even reports concerning different substances, and its manufacturers then given the impossible task of "proving" that the substance is not a carcinogen.

We should bear in mind that the organic arsenicals now rest in this unhappy position chiefly because of a tenuous relationship to potassium arsenite which itself is the proximate cause only of hyperkeratosis, and that only at levels of ingestion which have no reasonable relationship to those levels of arsenicals used in food and feed. The relationship of organic arsenicals to cancer is even more tenuous. We believe that the cancer clause should not be responsible for the condemnation of established substances with a long history of safe use solely on the basis of a chemical relationship to compounds that at worst are suspect as indirect carcinogens.

The proposed cancer clause constitutes a departure from constructive inquiry as to what evidence is necessary to demonstrate the overall safety of a compound. Therefore, it should be limited to demonstrated carcinogens, lest we create a widespread fear of ingredients ordinarily considered safe, to the detriment of the public interest.

As the chairman of this committee has recognized, this legislation "extends enormous authority to a Federal agency." (Transcript, p. 110.) The responsibility entrusted to the Secretary by a specific cancer clause is a weighty one.

As the chairman has also stated:

> * * * we also have to be a little careful that we do not go so far as to make everybody think they may or may not have cancer. (Transcript, p. 111.)

If the flat ban of a cancer clause is to be applied on the basis of remote implications from inconclusive scientific reports, the following substances might have to be excluded from our food supply as carcinogenic: coffee, tea, milk, cream, cocoa, claret, fat, vitamins, eggs, and sugar, to name only a few.

In his testimony on January 26, Secretary Flemming appeared to endorse the principle for which we are contending. He asserted on page 32 of the transcript:

The conclusion that an additive "is found to induce cancer when ingested by man or animal" is a scientific one. The conclusion is reached by competent scientists using widely accepted scientific testing methods and critical judgment. An isolated and inexplicable tumor would not be a basis for concluding that the test substance produces cancer.

In answer to a question from the chairman, the Secretary said on pages 114–115 of the transcript:

* * * I am not saying that no one knows whether it induces cancer when included in the diet of an animal. We do know that. And once we know that, and once it has been established, then we are simply contending that man should not be subjected to the risk that is involved in including the same substance in his diet.

To implement these comments by the Secretary, we believe it is essential to write a phrase into the cancer clause concerning the quality of the evidence which is required. If Congress considers that special reference to cancer is necessary in the proposed legislation, I would urge that section 706(b)(5)(B) of H.R. 7624 be deleted, and that the following proviso be added to section 706(b)(4) of S. 2197:

Provided further, That a color additive shall be deemed unsafe, for the purposes of this subsection, if the data before the Secretary establish that such additive has been found, by evidence considered reliable by experts qualified by scientific training and experience to evaluate the safety of color additives, to proximately induce cancer in man or animal (a) in the case of any use which is likely to result in ingestion of all or part of such additive, when ingested by man or animal or after tests which are appropriate for the evaluation of the safety of the additive for its intended use, or (b) in the case of any use which will not result in ingestion of any part of such additive, after tests which are appropriate for the evaluation of the safety of additives for such use, or after other relevant exposure of man or animal to the additive.

Our suggested amendment would be designed to insure the sound scientific judgment alluded to both by the chairman and by the Secretary on the first day of these hearings. The chairman voiced his hope that people would realize:

* * * we are trying to meet what we know and what we have found through the effective work of our scientists in the laboratories. (Transcript, p. 111.)

And the Secretary stated:

* * * I would want to stress the fact that we do not suggest that we should bar the use of a substance unless we know that it will induce cancer * * *. (Transcript, p. 116.)

Our proposed amendment would do no more than write into the law this statement of the Secretary's understanding. We feel that it is essential to do so because operating policy under the cancer clause of the food additives amendment has departed from this kind of scientific standard.

In order to permit full exercise of sound scientific judgment, a further amendment would be required. The Pharmaceutical Manufacturers Association has recommended a phrase which would cause the second part of (a) of our proposal to read:

When ingested by man or animal in an amount and under conditions reasonably related to the intended use * * *.

We believe the Pharmaceutical Manufacturers Association will develop amply the basis for this proposal.

The important and essential ingredient in the drafting of a cancer clause is that it will cause regulatory action to be initiated only with regard to substances shown by properly evaluated evidence to be the proximate cause of cancer within, but only within, the scope of sound scientific judgment. Any departure from these requirements will not add to the protection of public health, but will detract from it by undue suspicion and by the possible withholding of safe substances which may be necessary to food technology.

With respect to the scope of the bill, we see no justification for the imposition of controls over all subtsances that are capable of imparting color to foods, drugs, or cosmetics. There appears to be no valid reason to include all materials or ingredients, regardless of their chemical composition, that have any effect on the color of foods, drugs, and cosmetic products to which they may be added.

Under the sweeping definition of "color additive" set forth in section 101(c) of both bills, products such as tomato juice, orange juice, molasses, or butter and eggs would come within the jurisdiction of the proposed legislation. Their exclusion would reside wholly within the discretion of the Secretary and would require him affirmatively to determine that their use is "solely for a purpose or purposes other than coloring."

The only warrant for prior-licensing control over the processing of foods, drugs, and cosmetics is the necessity of this type of control to protect the public health. The kinds of products that are to be subject to this system of administrative licensing should therefore be determined on the basis of their own chemical nature and characteristics, not on the basis of what the Secretary conceives of as their functional value. It should be noted, in this connection, that to the extent that food ingredients do not come under the definition of "color additives" they would of course remain subject to the coverage of the food additives amendment.

In order that the legislation may be limited to the area of its legitimate concern, we believe that the following changes should be made in its coverage.

In section 101(c) of both bills, the proposed definition of the term "color additive," should be amended by revising subsection (A) to read as follows:

(A) is a dye, pigment, or other substance made by a process of synthesis or similar artifice or manufactured by extracting a natural dye or natural pigment from a plant or other material in which such die or pigment was naturally produced.

This would conform to the definition of "artificial coloring" in section 1.12(a)(2), of the regulations promulgated by the Food and Drug Administration (21 Code of Federal Regulations).

Subsection (B) should be changed to read:

(B) is added or applied to a food, drug, or cosmetic, or to the human body or any part thereof primarily for the purpose of imparting color thereto.

As presently drafted, this legislation would be applicable even to substances that are universally conceded to be wholly nontoxic and even nutritious. Though generally recognized as safe, any coloring substance would receive no more than the benefit of a "deemed" provisional listing which, under title II of the bill would be subject to ter-

mination at the will of the Secretary without any recourse either in the nature of a public hearing or by petition for judicial review.

This approach comes perilously close to violating our traditional concepts of equity and justice. The harsh impact can readily be avoided. The first step in so doing would be to delete the "except" clause in the "color additive" definition and to replace it with a new paragraph (C), reading as follows:

(C) is not generally recognized among experts qualified by scientific training and experience to evaluate its safety, as have been adequately shown through scientific procedures or common use to be safe under the conditions of its intended use.

In our view, certain provisions of section 203 of title II of the proposed bills, relating to provisional listing, are inconsistent with its stated purpose to make possible the use of commercially established color additives to the extent consistent with the public health pending the completion of needed scientific investigations.

On the one hand, section 203(b)(1) provides that certain colors shall be deemed to be provisionally listed. On the other hand, section 203(d)(2)(A) would authorize the Secretary to issue, amend, and repeal regulations without regard to any of the procedural safeguards that are applicable to his other actions.

Furthermore, section 203(d)(3) might possibly be construed to contradict the concept that established colors are automatically entitled to be provisionally listed.

The best way of resolving this difficulty is, I believe, the deletion of proposed sections 203(d)(2)(A) and (d)(3), and the inclusion of a section as indicated in our chart, to provide for normal administrative and judicial review.

In conclusion, I would like to state that we of Abbott recognize the sincerity involved in the drafting of this legislation and that we are acutely aware of the extreme caution Congress must exhibit in considering any changes that might be regarded as weakening its control.

We feel, however, that none of the changes that we have proposed will in any way lessen the efficacy of this measure in assuring the safety of our supply of foods, drugs, and cosmetics. To the extent that the coverage of the bill is limited in the respects I have suggested today, we believe that it will be possible for the Secretary and for the Food and Drug Administration to concentrate their efforts in areas where there is legitimate apprehension rather than to be forced to dilute their attention by consideration of matters which do not reasonably protect the public health.

Thank you, sir.

(The chart referred to in Mr. Gerden's statement is as follows:)

Color additive bill—Recommendations of Abbott Laboratories

Page reference to bills	Page reference to statement of Paul Gerden	Title I sections of Food, Drug, and Cosmetic Act	Marked up copy of S. 2197 unless otherwise indicated (deleted matter in black brackets; added matter in italic)
S. 2197: p. 2, line 19 to p. 3, line 10. H.R. 7624: p. 2, line 18 to p. 3, line 7.	19–21	201(t)(1)	The term "color additive" means a material which—(A) is a dye, pigment, or other substance made by a process of synthesis or similar artifice, or [extracted, isolated, or otherwise derived, with or without intermediate or final change of identity, from a vegetable, animal, mineral, or other source,] *manufactured by extracting a natural dye or natural pigment from a plant or other material in which such dye or pigment was naturally produced,* and (B) [when] *is* added or applied to a food, drug, or cosmetic, or to the human body or any part thereof [, is capable (alone or through reaction with other substance)] *primarily for the purpose* of imparting color thereto [; except that such term does not include any material which the Secretary, by regulation, determines is used (or intended to be used) solely for a purpose or purposes other than coloring.] *, and (C) is not generally recognized among experts qualified by scientific training and experience to evaluate its safety, as having been adequately shown through scientific procedures or common use to be safe under the conditions of its intended use.*
S. 2197: p. 8, lines 4 to 9. H.R. 7624: p. 7, line 23 to p. 8, line 3.	5–6	706(b)(1)	The Secretary shall, by regulation, provide for separately listing color additives for use in or on food, color additives for use in or on drugs, and color additives for use in or on cosmetics, if and to the extent that such additives are [suitable and] safe for any such use when employed in accordance with such regulations.
S. 2197: p. 8, lines 10 to 20. H.R. 7624: p. 8, lines 4 to 14.	5–6	706(b)(2)	(A) Such regulations may list any color additive for use generally in or on food, or in or on drugs, or in or on cosmetics, if the Secretary finds that such additive [is suitable and] may safely be employed for such general use. (B) If the data before the Secretary do not establish that the additive satisfies the requirements for listing such additive on the applicable list pursuant to subparagraph (A) of this paragraph, or if the proposal is for listing such additive for a more limited use or uses, such regulations may list such additive only for any more limited use or uses for which [it is suitable and] may safely be employed.
S. 2197: p. 9, lines 9 to 19. H.R. 7624: p. 9, lines 3 to 16.	8–18	706(b)(4)	The Secretary shall not list a color additive under this section for a proposed use unless the data before him establish that such use, under the conditions of use specified in the regulations, will be safe: *Provided, however,* That a color additive shall be deemed to be [suitable and] safe for the purpose of listing under this subsection for use generally in or on food, while there is in effect a published finding of the Secretary declaring such substance exempt from the term "food additive" because of its being generally recognized by qualified experts as safe for its intended use, as provided in section 201(s) *: Provided further, That a color additive shall be deemed unsafe, for the purposes of this subsection, if the data before the Secretary establish that such additive has been found, by evidence considered reliable by experts qualified by scientific training and experience to evaluate the safety of color additives, to proximately induce cancer in man or animal (a) in the case of any use which is likely to result in ingestion of all or part of such additive, when ingested by man or animal or after tests which are appropriate for the evaluation of the safety of the additive for its intended use, or (b) in the case of any use which will not result in ingestion of any part of such additive, after tests which are appropriate for the evaluation of the safety of additives for such use, or after other relevant exposure of man or animal to the additive.*
S. 2197: p. 9, line 20 to p. 10, line 20. H.R. 7624: p. 9, line 17 to p. 10, line 22.	4	706(b)(5)	Same as S. 2197.
S. 2197: p. 11, lines 3 to 14. H.R. 7624: p. 11, lines 4 to 15.	5–6	706(b)(7)	Delete.

Color additive bill—Recommendations of Abbott Laboratories—Continued

Page reference to bills	Page reference to statement of Paul Gerden	Title I sections of Food, Drug, and Cosmetic Act	Marked up copy of S. 2197 unless otherwise indicated (deleted matter in black brackets; added matter in italic)
S. 2197: p. 11, line 15 to p. 12, line 13. H.R. 7624: p. 11, line 16 to p. 12, line 13.	6–8	706(b)(8)	If, having regard to the aggregate quantity of color additive likely to be consumed in the diet or to be applied to the human body, the Secretary finds that the data before him fail to show that it would be safe and otherwise permissible to list a color additive (or pharmacologically related color additives) for all the uses proposed therefor and at the levels of concentration proposed, the Secretary shall, in determining for which use or uses such additive (or such related additives (shall be [or remain] listed, or how the aggregate allowable safe tolerance for such additive or additives shall be allocated by him among the uses [under consideration,] *for which such additive has not already been listed,* take into account, among other relevant factors (and subject to the paramount criterion of safety), [(A) the relative marketability of the articles involved as affected by the proposed uses of the color additive (or of such related additives) in or on such articles, and the relative dependence of the industries concerned on such uses;] [(B)] (*A*) the relative aggregate amounts of such color additive which he estimates would be consumed in the diet or applied to the human body by reason of the various uses and levels of concentration proposed; and [(C)] (*B*) the availability, if any, of other color additives [suitable and] safe for one or more of the uses proposed.
S. 2197: p. 19, line 24 to p. 20, line 7. H.R. 7624: p. 19, line 22 to p. 20, line 5.	21–23	203(d)(2)(A)	Delete.
S. 2197: p. 20, line 21 to p. 21, line 16. H.R. 7624: p. 20, line 19 to p. 21, line 11.	21–23	203(d)(3)	Delete; substitute the following: "The provisions of section 701(e), (f), and (g) of the basic Act shall apply to and in all respects govern proceedings for the issuance, amendment, or repeal of regulations under, this section (including judicial review of the Secretary's action in such proceedings) and the admissibility of transcripts of the record of such proceedings in other proceedings, except that—(1) the Secretary's order after public hearing (acting upon objections filed to an order made prior to hearing) shall be subject to the requirements of section 409(f)(2) of the basic Act; and (2) the scope of judicial review of such order shall be in accordance with the third sentence of paragraph (2), and with the provisions of paragraph (3), of section 409 (g) of the basic Act."

Mr. WILLIAMS. Mr. Younger.

Mr. ROBERTS. I have no questions.

Mr. WILLIAMS. Mr. Younger.

Mr. YOUNGER. Just one question, Mr. Chairman.

You make the statement that once an ingredient has been approved, there would be no authority for the Secretary to recind the approval; that is, a tolerance for a particular use, once allowed, should not therefore be canceled.

Can you conceive of a case where the Secretary might give a certain tolerance and then later on it was found that it was injurious and his hands would be tied and for public safety he could not exercise that power?

Mr. GERDEN. Mr. Congressman, I believe my statement refers to the establishment of a tolerance for a particular use.

Mr. YOUNGER. Yes.

Mr. GERDEN. And assuming a hypothetical situation, if a drug manufacturer has established a tolerance for use of a certain color, and perhaps that tolerance was then used up, but it was a safe product. The bill as now written would permit the Secretary—let us say if a lipstick manufacturer came in to revise our use of that color, and perhaps allocate part of it or all of it to another manufacturer. That is the point we make. We do not propose under any circumstances that any product which is not safe should not be discontinued immediately.

Mr. YOUNGER. Well, as I understand it, under the present law, according to what the Secretary gave in his evidence, if he issued a tolerance to one applicant and that was granted and then they found that it was injurious, they could deny it to a new applicant but they could not rescind it for the previous applicant.

Mr. GERDEN. I think under these bills——

Mr. YOUNGER. Under existing law?

Mr. GERDEN. I think under these proposed laws, if a color additive is found at any time not to be safe, the Secretary would have the authority to ban its use. I believe that is amply covered in the bill, sir.

Mr. YOUNGER. I cannot coincide that with your statement on page 7:

> A tolerance for a particular use once allowed should not thereafter be canceled.

Mr. GERDEN. Well, we are thinking there, sir, in the allocation of these colors, that if a certain manufacturer has been given permission under this act to use a color within a certain tolerance, that the Secretary should not have the authority to remove the tolerance—let us assume it is safe—and allocate that to another manufacturer. That is all we are proposing. We are not proposing that if there is a safety question that the color should not be banned. We are merely proposing that once a manufacturer has a color which he is using, that the Secretary should not have the arbitrary power to withdraw from one in whole or in part and give it to somebody else.

Mr. YOUNGER. You did not intend to say just because he does establish a tolerance which later develops to be a mistake, that he could not rescind the approval?

Mr. GERDEN. Absolutely not. He could rescind that.

Mr. YOUNGER. That is all, Mr. Chairman.

Mr. WILLIAMS. Mr. O'Brien.

Mr. O'BRIEN. No questions, Mr. Chairman.

Mr. WILLIAMS. Mr. Nelsen.

Mr. NELSEN. No questions.

Mr. WILLIAMS. Mr. Rogers.

Mr. ROGERS of Florida. Just a question or two. If the Secretary did decide to rescind such an order, you would want a hearing before that was done; would you not?

Mr. GERDEN. That is correct, sir.

Mr. ROGERS of Florida. Which is not now provided in the proposed legislation?

Mr. GERDEN. It is provided in title I but not in title II.

Mr. ROGERS of Florida. Yes.

Now, also, I wondered about your statements that begin on pages 13 and 14. I get the implication there that the Secretary or the Food

and Drug Administration has recently or in the past opposed the use of certain compounds without actually proving that through their testing that these substances did cause cancer in animals.

Mr. GERDEN. Yes, sir.

Mr. ROGERS of Florida. Even though they might not be able to prove that it causes cancer in man, at least they usually have proof in the animals. Do I understand they are now doing it without some proof along those lines?

Mr. GERDEN. That is my understanding but, with your permission, I would ask Dr. Matson to comment on that.

Mr. MATSON. Yes; this seems to be the situation.

Mr. ROGERS of Florida. Have you any specific example of that?

Mr. MATSON. The illustration given here in the presentation is on the organic arsenical drugs, which are used in animal feeds, and where the Administration feels itself unable to extend further approvals under the food additive law.

Mr. ROGERS of Florida. Now, were these tests not conducted on animals to show this——

Mr. MATSON. No. This is merely on the basis of an association with the inorganic arsenic compounds which, it was felt, do have some record in the medical literature of having been associated with cancer.

Actually, there is absolutely no record anywhere in the scientific literature that we know of that any of these organic arsenic compounds themselves have ever caused cancer.

In fact, I just refreshed my memory by looking at a review by Neubauer, which is probably the most authoritative thing and most comprehensive thing that has been written that I know of. He has a brief statement here which specifically touches on one of these organic arsenical compounds. It used to be used very widely in medical practice under the name Atoxyl, and his sentence there is:

> Some pentavalent organic arsenicals as cacodylates, Atoxyl and Arsacetine are—or were—frequently used as medicaments; but it seems that they never have proved as carcinogens.

But the Administration seems to feel that just because there is something of a chemical association that these compounds contain the element arsenic, that they therefore are unable to give further approvals.

Mr. ROGERS of Florida. Do you know if there were hearings held on this particular subject?

Mr. MATSON. No; there have been no hearings on this subject.

Mr. ROGERS of Florida. Has there been any challenge in the courts on that particular decision?

Mr. GERDEN. No, sir, we have not.

Mr. ROGERS of Florida. I wonder, because you also quote the Secretary's testimony on page 16, where he says:

> * * * I am not saying that no one knows whether it induces cancer when included in the diet of an animal. We do know that. And once we know that, and once it has been established, then we are simply contending that man should not be subjected to the risk that is involved in including the same substance in his diet.

It is my understanding of his testimony, that when they give these tests to animals and it is shown that there is a cancer-producing sub-

stance then these compounds would be ruled out. But you say it is being done before that has happened?

Mr. GERDEN. Yes, sir; it is.

Mr. ROGERS of Florida. Thank you.

Mr. GERDEN. We agree with the Secretary's statement. We are merely trying to write what he says into law.

Mr. ROGERS of Florida. But the present practice is not what the Secretary is saying?

Mr. GERDEN. That is correct, sir.

Mr. ROGERS of Florida. Thank you, Mr. Chairman.

Mr. WILLIAMS. Mr. Keith.

Mr. KEITH. Mr. Chairman, I would like to compliment the witness on his testimony and say, in my opinion, he has contributed greatly to the effort of this committee to enact legislation which will be reasonable. In the absence of legislation which is reasonable, the pure Food and Drug Administration has a very difficult time administering the law, and the public loses confidence in the edicts of that division. The end result is lack of respect for the pronouncements of an agency of government, and in the long run the public interest would be adversely affected.

We must not cry "wolf" unnecessarily because when the wolf shows at the door, we would not believe he is there. And the Secretary of Health, Education, and Welfare would, under the terms of the legislation we have before us today, have to unnecessarily alert great segments of our industry to dangers that are not in fact present.

That is all.

Mr. WILLIAMS. Mr. Rhodes, do you have any questions?

Mr. RHODES. No questions.

Mr. WILLIAMS. Mr. Brock.

Mr. BROCK. Mr. Chairman, I would like to address myself to the witness along the lines of my colleagues, Mr. Rogers, on the potassium salts.

Mr. GERDEN. You mean potassium arsenate?

Mr. BROCK. If we would go along with the reasoning of the agency then, and think of sodium chloride and think of sodium chlorate, with the addition of a couple of molecules of chlorine, then we could have a toxic salt of sodium, just as we can with potassium arsenite.

So I feel we should thoroughly study this subject of the different elements and their relationship to the health in human beings, and also animals.

That is all I have, Mr. Chairman.

Mr. WILLIAMS. Mr. Hemphill.

Mr. HEMPHILL. No questions, Mr. Chairman.

Mr. WILLIAMS. Mr. Gerden, on about page 5 of your statement you testified about the functional value of the additives and you apparently register objection to the use of the words "suited" and "safe" or the word "suitable" in the phrase "suitable and safe." Is it your contention that that imposes upon the Department or on the Government an obligation to determine whether the additive has a functional value and, if not, to deny the use of that additive if it has no functional value, even though its safety is not in question?

Mr. GERDEN. That, generally, is correct, Mr. Chairman, that the term "suitable" is a functional concept and we are not certain what

it means, but if it does not mean safe, in our opinion, it should not be in the law.

Mr. WILLIAMS. As I recall, in our work on the food additive legislation of 1958, the question of whether the Secretary can be given authority to determine functional value in addition to the safety of the additive, was rather controversial and we had a great deal of difficulty with it.

I confess that I do not recall just exactly how it was resolved in the legislation. Do you remember?

Mr. GERDEN. I think most of the functional value tests were eliminated from the——

Mr. WILLIAMS. If I recall correctly the legislation was compromised to some extent, and I know the functional value authority was removed.

Mr. GERDEN. Yes.

Mr. WILLIAMS. Do you feel that the Secretary should be given the power to determine whether or not an additive has a functional value and to control its use in that respect?

Mr. GERDEN. No, sir, he should not. He should determine its safety but not whether or not a certain color might be of value in his opinion.

The safety, yes; the functional characteristics, no.

Mr. WILLIAMS. May I say, I agree with you completely in that premise. I feel that that is a prerogative of American business to determine whether or not the use of a color or an additive in their product is functional or nonfunctional or without functional value.

The responsibility, in my opinion, of the Food and Drug Administration is to deal with the safety of the ingredient used for public consumption or consumption by the public, and to that extent I agree with you completely.

Are there any further questions?

Mr. Avery.

Mr. AVERY. In furtherance, Mr. Chairman, of the observation you just made, those same thoughts were going through my mind. When we examine that philosophy, whether choice should be left entirely to the discretion of the consumer, or whether factor other than health be taken into account by a Government agency, I am thinking in that same connection in terms of the Federal Security and Exchange Commission.

Now, we do not leave to the consumer (or buyer) in that case to decide whether or not a share of stock is a creditable issue. We assume that it is a rightful function of Government to decide whether a certain security should be put on the market. We are assuming the responsibility to make that decision for him, and so I am not so sure that I can agree with you in every respect, Mr. Gerden, that it has been established when or where should an agency not intervene in the public interest. To quote from your statement here, on page 6:

> Whether or not that color is a desirable one is a question to be determined in the first instance by the manufacturer and, in the final analysis, by the consumer.

"Desirable" should be defined clearly. Just from a philosophical standpoint, of course, I would like to agree with you, but it seems to me we have developed and accepted the doctrine of intervenor in the

consumer decisions here in the last 25 years and maybe we have intervened to the extent that the Government is expected to make some further—take some further responsibility in that area.

Now, one other instance or one other place in your statement, you drew my attention to, and this is completely unrelated to the question or observation I just made, on page 18, if you would turn to your statement, page 18, and in that last paragraph you summarize by stating that—

this decision of whether or not the additive was going to be harmful should be based strictly upon a scope of sound scientific judgment.

Well now, is that not just what we are discussing actually, who is going to decide what constitutes scientific judgment? Is not that the difference between the part of the industry and the part of the Administrator of Health, Education, and Welfare?

Mr. GERDEN. Our position is—now, we, as I have mentioned, some of the statements that the Secretary made, we are in complete agreement with. Now, however, as Dr. Matson mentioned, and as our testimony points out, under the Delaney clause in the food additives amendment, there has been deviation from, let us say, sound scientific judgment. Now, in our opinion, in our opinion, matters pertaining to any disease should be decided, as they have in the past, by the best scientific evidence available, and reliable scientific evidence, and that is all we are asking for.

Mr. AVERY. Well, do you not think the Secretary feels that he is asking for authority to make his decisions upon scientific evidence? Is it not the definition of scientific evidence that we do not agree on? I say "We," I mean all parties to this legislation.

Mr. GERDEN. I think that might be correct, but I think it might be a little more accurate to say that in some cases scientific evidence has not been considered, rather than a difference between the evaluation of scientific evidence.

Now again, referring to the example we placed in here on organic arsenicals, in my opinion, as a layman—and I would let Dr. Matson amplify this—but in my opinion as a layman, I think the scientific people have been pushed aside. Lawyers have no place in a determination of a given disease. We might have a place in another phase of society. But as far as the determination——

Mr. AVERY. Was that lawyers, you said, had no part in that decision?

Mr. GERDEN. I said lawyers should have no part.

Mr. AVERY. Yes.

Mr. GERDEN. In determining matters pertaining to disease or that.

Mr. AVERY. I am in full agreement with you on that.

Mr. GERDEN. And I am sure the medical men are, too.

Mr. AVERY. I do not want to let your point of view go without comment; that the Secretary has acted arbitrarily and not upon evidence presented to him by what he considers, anyhow, to be reliable scientists, and I am not a lawyer or scientist. When we reduce this down to the final points of difference here, it seems to be on definition of what constitutes a scientific decision and what you might construe as being one arbitrarily arrived at by counsel for the Secretary. Perhaps you have come to the right conclusion, I am not saying that you are wrong in what you have suggested here in the way of amendments,

but I am not willing to let the record stand without comment that it is a matter of nonscientific, nonsupportable position on the part of the Secretary, as it is a matter of judgment of what is in the public interest, how much and what kind of scientific evidence is necessary and should be relied upon in making a decision.

Mr. GERDEN. In that respect, sir, we disagree.

Mr. AVERY. That was the conclusion that only I could come to. [Laughter.]

Mr. ROGERS of Florida. Mr. Chairman, would you yield? I think it would be helpful and I certainly as one member of the committee would desire it, and I hope the committee would, to have the Secretary comment on this specific example which I think would clear this up for us to a great extent. Since Mr. Freeman, I believe, is here from the Department, if he could either get a written comment on this or else let us recall the Secretary and go into this, I think it could be fairly important.

Mr. AVERY. Yes.

Mr. GERDEN. We would, of course——

Mr. WILLIAMS. Let me ask Mr. Freeman. Mr. Freeman, do you think the Secretary would be willing to submit a memorandum giving us his views on this particular item?

Mr. FREEMAN. I am sure he would. I have no reason to doubt that he would not.

Mr. WILLIAMS. Would you take care of that?

Mr. FREEMAN. Yes, sir, I would be glad to.

Mr. GERDEN. We would appreciate the opportunity to be able to comment, if necessary, on the Secretary's comments.

Mr. WILLIAMS. I think the record will probably be kept open for some weeks after the hearing to receive rebuttals or re-rebuttals.

Mr. ROGERS of Florida. I think that would be proper, Mr. Chairman.

(The following letter was later received in connection with the above matter:)

THE SECRETARY OF HEALTH, EDUCATION, AND WELFARE,
Washington, April 18, 1960.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Dr. Kenneth A. Freeman, in charge of the Color Certification Branch of the Food and Drug Administration, who attented the color additives hearings on February 10, has advised me of your request for a statement outlining the status of arsenic-containing compounds under the food additives amendment to the Federal Food, Drug, and Cosmetic Act.

Six arsenic-containing compounds are used in poultry feed to stimulate the growth of poultry or to control disease in the flocks. Certain of these compounds may be used also in swine feed for gowth stimulation and disease. While the Department of Agriculture has the responsibility for inspection of meat and poultry at the point of slaughter, the Food and Drug Administration is responsible for the safety of new drugs for veterinary use and of feed for meat animals and poultry.

Before the enactment of the food additives amendment, some of these arsenic-containing compounds were allowed in animal feed under the provisions of the new-drug and antibiotic sections of the Federal Food, Drugs, and Cosmetic Act. The compounds were allowed in stated concentrations and with the understanding that they would be marketed with label directions requiring treated animals to be maintained for 5 days before slaughter on feed that does not contain added arsenic. The evidence before the Food and Drug Administration indicated that

this 5-day withdrawal period would allow the elimination of added arsenic from tissues of the treated animals and thus would insure the safety of the use of the arsenic compounds.

A very preliminary survey made some time ago by the Food and Drug Administration indicated that some poultry raisers are not withholding arsenic-containing feeds from their flocks 5 days before slaughter, and we have information that in some parts of the country, hog raisers maintain their animals on arsenic-containing feed within the 5-day period that the arsenic is supposed to be withheld. It is evident that such disregard of the directions for safe use could lead to added arsenic residues in poultry and pork on the retail market and thus could frustrate the public health safeguards upon which the original approvals were granted. It is our purpose to look into this situation further, but our investigation has been delayed pending a search in the laboratories of the Food and Drug Administration for suitable analytical methods to support the investigation.

In September 1958 the food additives amendment to the Federal Food, Drug, and Cosmetic Act became law. This provides, as you know, that a person who proposes to promote an additive for use in food must first present evidence of the safety of the use to our Department and secure approval through the issuance of an appropriate food additives regulation. It provides also that we may not sanction the addition of a substance to food if it has been found to induce cancer when fed to man or animal, or if it has been found to induce cancer by other appropriate tests. (Food, as defined in the law, includes food for animals as well as for man.)

The specific uses of arsenic-containing compounds on the basis of applications that were approved by the Food and Drug Administration under the new-drug or antibiotic sections of the law before enactment of the food additives amendment are exempt from the application of the food additives amendment. Thus, many uses of arsenic-containing compounds in animal feeds may continue as before.

Whether other uses of these and other arsenic-containing compounds in animal feeds would be subject to the food additives amendment depends upon whether appropriately qualified experts generally recognize such uses as safe. If they do, then the chemicals are not included in the definition of food additives. There was some question in our mind as to whether these uses were generally recognized by experts as safe and we brought this to the attention of the Animal Health Institute, Des Moines, Iowa, and the American Feed Manufacturers Association, Inc., in June and July 1959. It was our understanding that one or both of these organizations, perhaps with the assistance of some of the veterinary drug manufacturers whom they had contacted, would canvass a number of scientific experts in the country to determine whether the additional arsenicals were generally regarded as safe under their intended conditions of use. So far as we know, this has not been done. Consequently, it is our purpose in the near future to make such an investigation without waiting further for industry action.

If the proposed uses of the arsenicals in animal feeds are subject to the food additives amendment, then one part of the showing of safety that is required under the amendment will be to determine whether the cancer clause of the amendment applies. The Food and Drug Administration tells me that the organic arsenic compounds used in animal feeds have not been shown to produce cancer when fed to test animals. On the other hand, we do need more advice from the scientists who are most knowledgeable in the arsenical field. We are taking steps to get this advice.

As you know from the testimony I gave before your committee on January 26, we expect to propose an amendment to the food additives law that would allow us to sanction the use of a chemical in animal feed, even though it may have been shown to produce cancer in test animals if the proposed use could leave no residues in edible products derived from the animal for which the feed was intended and were without harm to the animal itself. Such an amendment, together with the further studies that we are undertaking, may well resolve a number of questions that have arisen about the arsenic compounds since the food additives amendment was enacted about a year and a half ago.

Sincerely yours,

ARTHUR S. FLEMMING, *Secretary.*

Mr. WILLIAMS. Thank you very much.

Mr. GERDEN. Thank you, Mr. Chairman.

(The following paper was submitted for the record by Mr. Matson:)

Scientific Judgment in Law and Regulation

Presented before the American Association for the Advancement of Science, Section on Pharmacy, December 30, 1959, by Edward J. Matson, Director of Scientific Administration, Abbott Laboratories, North Chicago, Ill.

Just 16 months ago the Congress placed on the statute books a new Federal food additive law. Congress considered it necessary because of the greatly increased speed of development of food technology. The law reversed the whole pattern of enforcement by requiring in effect that a general license be granted by the enforcement agency prior to putting into use any new additive developed through food research. This new responsibility demands of the Food and Drug Administration administrative judgment of a different order than before. If sound policy is not developed and followed consistently, business and the public both can suffer needlessly. Certain events of the last year have disturbed many, events which indicate an uncertain administrative striving for the soundest scientific judgment.

BUSINESS RESPONSIBILITY

Let me say clearly that I would not oppose the imposition on the food industry of any law soundly conceived and necessary for the protection of public health. Several generations ago it began to be understood that business cannot be a law unto itself, but will prosper only as it responds to public need.

In this connection, I am reminded of a chapter in the recent book by Mr. A. A. Berle, entitled "The 20th Century Capitalist Revolution."[1]

In the chapter, "The Conscience of the King and of the Corporation," Berle says:

"Deep in human consciousness is embedded the assumption that somewhere, somehow, there is a higher law which imposes itself in time on princes and powers and institutions of this terrestrial earth. We must leave doctrine to the theologians; but as students of legal history we have to take account of the persistent fact of this huge assumption. Keepers of the tradition of this higher law—medicine men in primitive times, magicians or sybils in the ancient world, or divines today—are regularly listened to with respect. They have power, though it is not the power either of purse or sword. Throughout Western history a priest could commonly intimidate a policeman; the Cross could quite frequently stop the king * * *.

"It is here suggested that a somewhat similar phenomenon is slowly looming up in the corporate field through the mists that hide from us the history of the next generation. There is beginning to be apparent a realization of a counter force which checks, and remotely acts on, and in time may modify in certain areas the absolute power of business discretion. In our system it emerges in time as law; and good lawyers watch for it."

My only comment on Mr. Berle's statement is that, in the food and drug industries at least, the moral responsibility he speaks of has already been assumped. And the restrictive laws are already in force. The question is therefore appropriate as to how well the enforcing agency is able to act under the law to exercise its power even-handedly in the public interest.

JUDGMENT AFFECTED BY EMOTION

I spoke of an uncertain striving for sound scientific judgment in the handling of regulatory problems. Let me say at once that this uncertainty is not restricted to regulatory officials: lapses in judgment occur all too frequently among scientists. Let me give an example—one to which I shall return later for further discussion.

The Congressional Record of August 27 carries a letter[2] by an eminent physiologist, Dr. Harold F. Blum, to Congresswoman Leonor K. Sullivan. he letter answers her request for information on the establishment of tolerances for chemical substances added to foodstuffs.

Having pointed out that our knowledge is limited of how to determine the "threshold dose" of a cancer-producing agent in man, Dr. Blum concludes:

"* * * it would seem that the only practical answer would be to keep any substance known to induce, or suspected of inducing cancer at as low levels as

[1] Berle, A. A., "The 20th Century Capitalist Revolution," p. 69, 1954, Harcourt.
[2] Extension of remarks of Hon. Leonor K. Sullivan, Congressional Record Appendix, vol. 105, A7482 (Aug. 27, 1959).

feasible. The assigning of tolerance limits—which must necessarily be arbitrary—can only give a false sense of security."

It is the last four words—"false sense of security"—which disturb me. Admittedly the desire for security is a powerful motivating agent. It has great power to involve our whole emotional makeup. The same thing might be said at the present time of the word "cancer." It is something from which we would like to be separated by an absolute guarantee. But we cannot forget that complete security, from cancer or from any other state which may befall man, is not absolutely attainable in human life.

To say, therefore, that the setting of a tolerance for a chemical used in food, on the basis of the best scientific judgment, would give a "false sense of security" is really to transfer the false sense of security elsewhere. For it suggests that, if no tolerances are established for a substance known to cause, or even suspected of causing cancer, say, in experimental animals, all tolerances which are set for other substances are entirely free of question or of hazard.

For example, does the establishment of a tolerance for a new antioxidant mean that nowhere among the 170 million people in the United States might the antioxidant produce a skin reaction, or some other unexpected response? It is impossible to guarantee with absolute certainty that any substance is incapable of some unexpected effect.

WHAT IS SCIENTIFIC JUDGMENT?

I used the term "scientific judgment." What does the term mean?

In the first place, it is based on belief. Belief is an all-or-none proposition. A young man doesn't say, "I probably believe Susie Brown loves me." He might say, "I believe Susie Brown probably loves me." Daisy petals give only two choices of belief: "she loves me"; "she loves me not."

On the other hand, one may properly speak of degrees of reasonableness of belief. One appraises the probabilities that a belief is true and arrives, more or less formally, at an idea of how firm is the evidence on which his belief is based. One expects to watch for further evidence affecting his belief. If it continues favorable, his belief is strengthened; if the trend is adverse, there comes a point at which he abandons his belief, and that is that.

What then is "scientific judgment"? It is the concept that reasonableness as applied to belief may properly be related to reasonableness in acting upon the belief. In other words, when enough data are obtained to support taking an action which has desirable practical consequences, it is foolish to delay action for more stringent evidence. A regulatory agency, therefore, uses "scientific judgment" in deciding that the probability of safety of an additive used within a certain tolerance limit warrants issuing the tolerance.

TWO PURPOSES FOR THE FOOD ADDITIVE LAW

The food additive amendment to the Federal Food, Drug, and Cosmetic Act was passed with two purposes in mind, according to the report [3] of the Committee on Interstate and Foreign Commerce of the House of Representatives:

"(1) To protect the health of consumers by requiring manufacturers of food additives and food processors to pretest any potentially unsafe substances which are to be added to food; and (2) to advance food technology by permitting the use of food additives at safe levels."

The first purpose is self-evidently desirable. There was unanimous support from both business and the public for a new law which would set forth clearly that the safety of a new food additive must be scientifically established before it is used.

There is some tendency to forget the second purpose of the new law—that food technology is to be advanced by permitting new substances to be used in foods at safe levels. This is no idle purpose. It is essential to our national future. Look at the manner of living of the American people as we enter 1960. Few of us produce our own food. Most of us are city people far from the place where food is produced. We seem intent on increasing the birth rate. We have allowed our wives to learn to rush into the market at the last minute to pick up a supply of pushbutton meals which they can serve on time, even though they are late because their committee meeting ran overtime.

Deputy Commissioner Harvey of FDA has been quoted as saying "* * * It would be, perhaps, utterly impossible to feed the country without food additives

[3] H. Rept. 2284, 85th Cong., 2d sess., July 28, 1958.

unless we moved our homes out of the congested centers." He is right. As we face the population explosion of American cities we see that there is no choice but to process food so that it may be transported long distances and stored for extended periods of time and still retain its nutritious value and its acceptability when it is purchased and used by the consumer.

POLITICAL AND SCIENTIFIC PRESSURE

The enforcement of the food additive law so as to best comply with both purposes—safety for the user and the advancement of food technology—requires judgment of the highest caliber in the regulatory agency. And it can be nothing but the best scientific judgment. A great danger to the exercise of sound judgment occurs when there is pressure to repudiate the second aim of the food additive law—that is, to enforce the law in such a way that food technology actually no longer advances.

This influence may be applied politically, or it may come from within the scientific community itself. Let me give you examples.

In a speech [4] on the floor of the House last September 9, Representative David S. King of Utah proposed creation of a commission to investigate "the entire subject of food and beverage contamination." This was necessary, he said, because "our laws on nutrition are loose and inadequately drawn, public knowledge is fragmentary and riddled with misinformation and discarded dogmas, and the means of disseminating information on this subject are inadequate."

Because of this, the American housewife "is only dimly aware, if at all, that it is almost impossible for her to purchase any article of food that has not had chemicals, bleaches, preservatives, additives, dyes, adulteratives, and other foreign substances added to it."

Representative King then gives the scientific judgment at which he has arrived:

"I am quite aware of the fallacy of oversimplification, and I fully recognize the probability of a multiplicity of causes in any phenomenon as complex as disease. What I do say, however, is that the ever-increasing scientific evidence renders it highly probable that the invariable concurrence of diseases and body contamination by the consumption of toxic chemicals is more than coincidental."

Now, the last sentence is a scientific sentence. It speaks of "increasing scientific evidence," and it states that the reasonableness of belief in his conclusion is "highly probable." Representative King says frankly that his opinion is based "solely upon the conclusions of the dedicated men of science who do qualify as experts." His opinion is stated in rather strong terms:

"* * * I am convinced that the contaminatives, additives, and toxic chemical compounds taken into the human body in connection with our regular food and drink, are in large measure responsible for the deplorable deterioration of our national health."

This statement reflects a deplorable evaluation of our national health. There seems to be abundant evidence that Americans may rightfully expect to live longer and better lives than did their forebears of 50 years ago. What concerns me is that views such as this held by Members of Congress concerning food additives constitute a substantial political pressure on an agency such as the Food and Drug Administration, charged with protecting public health and also advancing food technology, regardless of what the law says. I believe it is important, therefore, to know what expert scientific opinion Representative King relies on. He quotes from one of these authorities, Dr. W. Coda Martin, President of the American Academy of Nutrition, who testified in the House hearings on the food additive bill in 1957.[5]

Dr. Martin said at that time:

"The human body can utilize only natural foods as nourishment and survive. Chemicals are not food elements. Therefore they can produce only negative or harmful results, even though they are by scientific analysis nontoxic. It is only a question of how much harm they will produce, when used to replace essential food elements in our diets."

Dr. Martin is known as a strong proponent of "natural" foods. We are well aware that there are many in our country who wish to eat no foods that were not grown with manure as the only fertilizer, who think of added food ingredients as essentially poisonous.

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[4] King, Hon. David S., "Health of the American People," Congressional Record, vol. 105, pp. 17326–17329, Sept. 9, 1959.

[5] Martin, Dr. W. Coda, hearings before Subcommittee on Health and Science, House Committee on Interstate and Foreign Commerce, 85th Cong., p. 279 (1958).

I think we should understand clearly that this represents a sharp difference in scientific judgment on the safety of food additives.

The science of pharmacology performs on the basic assumption that research over a reasonably short period of time, combined with insight as to the probable significance of the results, will permit the acceptance of food additives as safe for human beings with substantially no hazard involved. This is the essence of scientific judgment. Against that one contrasts the empirical method, whereby one gets results only by long trial-and-error, taking no opportunity to recognizes clues which will lead to the best answer in a shorter period of time.

The new food additive law permits the first approach, whereby it is believed that a food chemical may be cleared as safe by competent pharmacologic methods within a reasonable time. The proponents of "natural" foods seem to assume that naturally occurring chemical compounds are inherently harmless, or at least that they have been found by trial-and-error over hundreds and thousands of years to be safe for use. Frazer [6] has commented well on this matter:

"The addition of either natural or synthetic chemicals to food carries a potential risk to the consumer if the pharmacological action of the substance in this dietary context is not known. Synthetic chemicals are no more likely to be toxic than natural substances—indeed, many of the most potent poisons known are of natural origin. Substances that have been consumed as food for centuries are not necessarily harmless, since millions of people have died from unknown causes over the same period. Thus, many natural constituents of the diet may have harmful potentialities. The diet must be regarded as a part of the environment of man, and one of the factors that may determine the lifespan of the individual. The problems of chemicals in food fall into their proper perspective when examined against this broader background."

For my part, then, I prefer to base my chances for survival on the pharmacologic method.

The views of those who wish to accept as safe only those chemicals of natural foods are fundamentally a repudiation of the science of pharmacology, and therefore a repudiation of the scientific method generally. In the food additive field, this means a repudiation of scientific judgment. It would be far better if a regulatory agency in this field were not subjected to pressure of this type, of either scientific or political origin.

MEANING OF THE DELANEY CLAUSE

Undoubtedly no section of the food additive law has been more disturbing than the so-called Delaney clause, section 409(c)(3)(A). This clause was added just prior to the passage of the food additive amendment, and operates to limit the discretion of the Food and Drug Administration in acting upon a petition for a food additive. It reads:

"*Provided*, That no additive shall be deemed to be safe if it is found to induce cancer when ingested by man or animal, or if it is found, after tests which are appropriate for the evaluation on the safety of food additives, to induce cancer in man or animal * * *"

When the bill was enacted it was not generally suspected that this language might be construed in such a way as to limit scientific judgment. In fact, the Food and Drug Administration expressed the view that the food additive amendment meant the same with or without the Delaney clause. However, subsequent events have shown that the Federal agency has interpreted the law beyond what it appears to mean.

The Delaney clause has in it what lawyers call a per se concept. You will recall that the first part said that no additive can be used in foods "if it is found to induce cancer when ingested by man or animal * * *." This language leaves no room for scientific judgment in that it bars absolutely a substance that has caused cancer when taken orally by man or animal, regardless of the amount required to cause the effect or the length of time necessary to cause it.

I believe experience has shown us that no per se law is a good one. No law can so completely spell out how a scientific matter should be regulated that judgment should be completely excluded. For that reason the Delaney clause is bad law.

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[6] Frazer, A. C., "Problems Arising From the Use of Chemicals in Foods." Pharmacological aspects, Chem. and Ind., No. 21, p. 456 (May 24, 1952).

NEGATIVE INTERPRETATION OF THE DELANEY CLAUSE

Nevertheless it is a law with which we could probably live, because none of us wants cancer anyway, if it were properly interpreted by the Food and Drug Administration. The phrase "is found to induce cancer when ingested" looks quite straightforward. The words "is found" plainly mean that enough data exist to establish reliably that a substance has really caused cancer in man or animal. Our knowledge of cancer is still so limited that any other basis for calling a substance a cancer-producing agent leaves the scientist deep in confusion.

Imagine the consternation produced by the FDA in its first action under the Delaney clause when it announced that no additional approvals would, for the present, be given to animal feeds incorporating any arsenic-containing compounds. This was a strange beginning to the enforcement of the Delaney clause as it set a precedent whereby an entire class of chemical products, known and unknown, was prejudged and condemned, including some organic arsenical drugs which are generally recognized as safe under the conditions of intended use.

Fortunately, FDA later amended its views by conceding that it has not been demonstrated that all arsenic compounds are carcinogenic. It was contended only that certain inorganic arsenicals have been found to induce cancer in man.

It is not the purpose here to evaluate the evidence on which inorganic arsenic is considered to be carcinogenic. Some scientists who have studied the evidence feel that it is much too sketchy to be valid for man, and there is no good evidence whatever that it has been possible to produce cancer in experimental animals. Attention is called rather to the surprising position next taken by FDA. Additional approvals for organic arsenical drugs are to be denied because "there remains a relevant, scientific question whether such substances may cause cancer * * * our scientific advisers cannot say that arsenic compounds used in feed are safe until it is demonstrated that such compounds do not have this carcinogenic potential. * * *"

Now, this is a far cry from the language of the Delaney clause. It is difficult enough to apply reasonably a law which leaves no room for scientific judgment, except for the judgment whether data are sufficient to establish a substance as a carcinogen. Scientifically it is an entirely different matter to be asked to establish that a substance is not a carcinogen. Imagine what the problem would involve, if you were asked to prove it.

Let's look at what is involved in proving a negative proposition. Suppose you have a two-headed coin in your pocket and I have the assignment of proving it although I may not see the coin. In other words, I must establish that the coin does not have "tails." I would ask you to flip the coin. If it came up "heads" five times in a row, I wouldn't think too much of it. If it came up "heads" 10 times straight, I would begin to be suspicious. If it came up "heads" 20 times in a row, I would feel it quite probable, and practically proved, that your coin did not have "tails" on it, but that you had tinkered illegally with money and had one with two "heads."

That little experiment of proving the negative might take 3 minutes. Just how long can you imagine it would take a pharmacologist to prove with an equal degree of certainty that a certain chemical substance does not cause cancer?

One can only think that this unfortunate interpretation of the Delaney clause is a consequence of the kind of political and scientific pressure I mentioned earlier. But it is my firm opinion that an enforcement agency cannot allow itself to adopt a regulatory policy which requires the proof of a negative before approval under the law can be given. Granted that cancer is an important disease, granted that we all have a strong emotional reaction toward it, still we cannot really help meet the problem of cancer by the scientifically impossible requirement that any food additive be proved not to cause cancer before it can be used.

MODIFICATION OF DELANEY CLAUSE NEEDED

It is clear that the Delaney clause implies and has been read to mean more than is scientifically possible to accomplish. If there is a feeling that the Delaney clause serves any purpose at all, I believe it must at least be modified promptly to restore perspective.

There is no difficulty from an enforcement standpoint in the exclusion from our food supply of a "strong carcinogen." No one has ever proposed that a tolerance be set for 3,4-benzpyrene, although it might be quite possible when we someday understand how the cancer process is initiated.

The difficulty comes with what we call "weak carcinogens." Just what we mean by the term, I am not sure we know. However, it does cover those substances which induce cancer only over a very long period of time or in only a very low proportion of individuals exposed to it.

Let us agree again that our knowledge of cancer and the carcinogenic process is very limited and will remain so until scientists have made many more discoveries which will help us to predict how the process works.

One thing already accepted by most experts in the field is that there truly is a threshold dose of a carcinogen, below which cancer is not produced in animals. How to convert animal data to apply to human beings is not yet understood, so that we cannot yet predict the threshold dose in man from knowledge of the threshold dose in experimental animals.

Of course, there is a minority view that no such thing as a threshold dose of a carcinogen exists. Professor Druckrey[7] of Germany has the opinion that "the reason why extremely small doses produce no cancer is not that there is a 'threshold dose' but because the necessary induction time becomes longer than the total life span." Personally, I do not intend to worry about such dose levels.

Regardless of the limitations in our knowledge of cancer, I believe there is one change in the Delaney clause which can and should be made now. A few words could be added so that it reads something like this: "* * * no additive shall be deemed to be safe if it is found to induce cancer when ingested by man or animal in amounts and under conditions reasonably related to the intended use. * * *" Such language would give opportunity to restore scientific judgment to the interpretation of the Delaney clause.

Regulatory Action That Benefits the Public

A regulatory agency may properly be asked to look for the black threads of hazard lying on the white cloth of public health. It may even be asked to look for the gray threads, if they are important enough. No agency should be asked to look for white threads lying on the white cloth of public welfare.

In the field of cancer we already know of a few black threads. A few threads may be gray. But our present information indicates that there may be thousands of white threads. They are part of the background of our human life and are certainly not at this stage anything which a regulatory body can or should spend its time on.

Human experience shows us that sensitivity to cancer-producing agents varies widely between individuals. If we can we are, of course, interested in offering protection to those who are most sensitive. Nevertheless it appears that for those who are so constituted genetically as to be most exquisitely sensitive, only a light pull on the trigger may be enough to set off the cancer process. The trouble is that, in this situation, it seems that countless agents may pull the trigger: cholesterol, hormones, sugar, salt, sunlight, almost anything.

We cannot eliminate from the human diet all the trace amounts of substances which have been or might be suspected of setting off the cancer process in human beings or in experimental animals. These are the white threads on the white background of human life. We must provide that scientists of the Food and Drug Administration shall be permitted to use reasonable scientific judgment, not giving regulatory recognition to those trace amounts of a food additive so distantly related to the amount and duration of use known to constitute a hazard that no purpose is served by recognizing them.

Dr. Blum spoke of a "false sense of security." This is where I believe the real danger of a false sense of security lies: calling attention to a few white threads may give the false impression that the normal hazards of living on this earth have been substantially reduced. Let us write our laws and let us set regulatory policy under them so that we will find and eliminate the real hazards, and as many of the gray areas as diligent scientific work will permit us to find. Until that job is done, let's leave the remote possibilities to the future.

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[7] Druckrey, H., "Pharmacological Approach to Carcinogenesis," Ciba Foundation Symposium on Carcinogenesis. Mechanisms of Action, p. 117 (1958), Little, Brown & Co., Boston.

Mr. WILLIAMS. Mr. Kuniholm, about how long is your statement?
Mr. KUNIHOLM. It is three pages, sir.
Mr. WILLIAMS. Three pages. Let us take you now.
Proceed.

STATEMENT OF JOHN G. KUNIHOLM, CHAIRMAN, FOOD PACKAGING MATERIALS COMMITTEE, THE SOCIETY OF THE PLASTICS INDUSTRY, INC.; ACCOMPANIED BY JEROME HECKMAN OF THE LAW FIRM OF DOW, LOHNES & ALBERTSON, LEGAL COUNSEL TO THE SOCIETY

Mr. KUNIHOLM. My name is John G. Kuniholm, and I am attorney for Hercules Powder Co. I appear today in my capacity as chairman of the Food Packaging Materials Committee of the Society of the Plastics Industry, Inc. I have by my side Jerome Heckman of the Washington law firm of Dow, Lohnes & Albertson, legal counsel to the society.

The Society of the Plastics Industry, Inc., was formally organized and incorporated in the State of New York in 1937. Its present membership of over 2,000 consists of companies and individuals responsible for approximately 85 percent of the plastics industry sales dollar-volume-wise. The society seeks to disseminate scientific, engineering, and other information on plastics, and generally to advance the application and use of plastics. The growing use of plastics in food containers and films is a most important aspect of our industry.

I would like to digress from my statement at this time, Mr. Chairman, in light of the letter from Secretary Flemming which was read to you earlier. We should like the committee to know that we believe the Secretary's letter is partially a response to a letter which we sent to FDA some weeks ago and that in general his letter will do much to meet the problem I intended to discuss with you today.

Nevertheless, I shall proceed with our statement because we would prefer that our problem be handled by a change in the wording of the law rather than by any expression of FDA intent.

Since we feel that there is no real difference of opinion on the substance of this matter in the light of the Secretary's letter, we can see no great difficulty in making the language change we shall suggest, and we hope your committee will agree.

We are concerned today only with the effect that the proposed color additives may have on components used in packaging materials. We have no interest in food colors as such.

We have been formally advised by the Food and Drug Administration that the proposed color law will not be construed to regulate packaging colorants that do not transfer to food. Our only remaining concern then is with those possible situations where components of food packaging materials which transfer to food might fall within the definition of color additive, that is, might be "capable of imparting color" to food. Under the Food Additives Amendment of 1958, all components which migrate from packaging to food must, unless exempted, be cleared under section 409 of the Food, Drug, and Cosmetics Act.

If the proposed color additives amendment were enacted in its present form, it is entirely possible that these same components would

also have to be cleared under the color additives amendment. To require this would impose an unnecessary burden on the industry—a complete duplication of effort—without any corresponding benefit to the public.

We believe it of fundamental importance to maintain the distinction between colors used in food and colorants used in packaging. In short, there are two categories: Food colors and packaging colorants. There is no useful purpose to be served by subjecting food packaging colorants to the requirements of a law designed to regulate food colors.

Plastic packages are not now subject to the food additives law except in those instances where there is a transfer of some component in the packaging to the food. In all such cases the portion which transfers is regulated under the food additives amendment. If by mere happenstance, the part which transfers should be "capable of imparting color" to the food, we do not believe that this fact alone should make it necessary to treat the component as a food color, as well as a food additive.

In summarizing, it is our position that the following principles should be maintained with respect to food packaging materials and the color additives law.

1. The distinction between food colors and packaging colorants should be clearly recognized.
2. Only food colors should be subjected to color additives controls.
3. Food packaging colorants should not be subject to the law at all except in those cases where they may migrate to food. In these cases they should remain subject to the food additives law as at present.
4. In those rare situations where the same substance is used both as a food color and as a food packaging colorant, it should be made clear that clearance under the color law would obviate the need for clearance under the food additives law.
5. Occasionally a food color may be deliberately introduced into a food through intentional transfer from a package for the express purpose of adding color to food. In such cases those colors should be treated as are all food colors, that is, under the color additives amendment.

In conclusion, therefore, if migratory packaging components other than those by design intended to add color to food were required to be cleared only under the food additives amendment, instead of under both the food additives amendment and the color additives amendment, administration of the laws would be simplified without any impairment of public health protection.

Accordingly, it is our recommendation that the definition of color additive appearing in S. 2197 be amended by adding a clause thereto exempting from its coverage "any packaging material component" unless such component is by design, intended to add color directly into or on food.

And the text of the amendment is attached to the statement.

Mr. WILLIAMS. It will be included as part of your statement.

Mr. KUNIHOLM. Thank you.

(The text of the amendment referred to follows.)

SUGGESTED CHANGE IN STATUTORY LANGUAGE

It is suggested that section 101 of S. 2197 (Aug. 25, 1959, print) be amended so that the term "color additive" would be defined as follows:

(For convenience, the committee's attention is directed to lines 19 through 23 on page 2 and lines 1 through 10 on page 3 of the August 25 print since these lines would be the ones affected by the change hereinafter suggested.)

"(t) (1) The term 'color additive' means a material which—

"(A) is a dye, pigment, or other substance made by a process of synthesis or similar artifice, or extracted, isolated, or otherwise derived, with or without intermediate or final change of identity, from a vegetable, animal, mineral, or other source; and

"(B) when added or applied to a food, drug, or cosmetic, or to the human body or any part thereof, is capable (alone or through reaction with other substance) of imparting color thereto; except that such term does not include:

"1. Any packaging material component, unless such component is by design intended to add color directly into or on food;

"2. Any material which the Secretary, by regulation, determines is used or (itended to be used) solely for a purpose or purposes other than coloring."

(The italic material embodies the suggested changes.)

Mr. WILLIAMS. Do I understand that you feel that so-called accidental or incidental additives should not be covered by this legislation?

Mr. KUNIHOLM. We feel that they should remain subject to the food additives legislation and not be covered by this legislation.

Mr. WILLIAMS. Mr. Rhodes. Mr. Younger.

Mr. YOUNGER. I do not quite understand the statement that you make at the bottom of page 3, especially where you say it is intended to add color directly to food or onto food. In other words, how are you going to determine whether it was intended or unintended other than by a voluntary admission?

Mr. KUNIHOLM. Sir, there are some very rare situations, perhaps the one that serves as the best example, I understand that manufacturers of cheese, in order to get a certain color on the surface of the cheese, put the color into the package, and it is so formulated for the express purpose of transferring from the package to the cheese.

I also understand that that is done in the case of certain sausage casings, that something is put in the package intentionally for the purpose of coloring the food.

Mr. WILLIAMS. That would be an intentional?

Mr. KUNIHOLM. Yes.

Mr. WILLIAMS. That would be covered with or without your amendment, would it not?

Mr. KUNIHOLM. Right. That type of color would be included under the color additives amendment because it is a food color.

Mr. YOUNGER. But what if they said it was not intended? In other words, you recommend that the clause be put into the act yet it would seem to me it would be rather difficult to always arrive at a conclusion as to the intent of a person when he was deprived of certain rights which he thinks are his.

Mr. KUNIHOLM. Well, sir, I think in this situation, if it were impossible to prove his intent, he would still be subject to the food additives amendment. One way or the other he would be required to prove safety.

Mr. YOUNGER. That is the only question I have.

Mr. WILLIAMS. May I say, the food additive was put in specifically to cover that type of additive, whether it is necessary here or not.

Any further question? Mr. O'Brien. Mr. Avery.

Mr. AVERY. I have just one, if I may, Mr. Chairman.

If I may reduce this down as I see it here, in view of the Secretary's letter which I have a copy before me and which I have reread, and as a parallel to your statement, it seems now the only difference is down to the degree of migration; is that not true?

The Secretary states in his letter if there is no migration, why, he assumes it would not be covered by the color additive amendment.

In your statement you say that it should be amended so that no transfer of color, unless intended, should come under the color additive bill, so we are down to the difference of migration; is that not true?

Mr. KUNIHOLM. I think, sir, that it may be expressed that way. I think the real possible difference here is whether the intent should be clarified through a legislative change in the language or whether it should be dependent upon the letter from the Secretary.

In other words, I think that the language of the color additive amendment is quite clear, and unambiguous, in its statement that migratory packaging colorants would be covered.

Mr. AVERY. Well, the letter does not change that, does it?

Mr. KUNIHOLM. Well, the letter, Mr. Congressman, indicates——

Mr. AVERY. If it migrates, it would still be covered, as I read the letter.

Mr. KUNIHOLM. Well, as I understood the letter, it was the Secretary's position that unless it migrated with, in a fashion that was visible to the naked eye, that he would apply that test.

Mr. AVERY. Well, this is getting rather involved here to take up at this time of the day. I would just like to read for the record this one very brief sentence:

> It is our view that a color additive amendment would not apply to color materials in food wraps that do not migrate from the wrap to the food.

So it would seem to me the inference is there; if they do migrate, they would still be covered.

Mr. KUNIHOLM. Well, I think there is no controversy on the first point. If they do migrate to food, I think that we are in agreement with the Food and Drug Administration that they should be covered under the food additives amendment, and not under the color additives amendment, except in the event where the migration is visible to the naked eye, and then it would be a color.

Mr. HECKMAN. I wonder, Mr. Chairman, if I might just take one moment, I think I might be able to help here.

Mr. WILLIAMS. Would you identify yourself.

Mr. HECKMAN. I am Mr. Heckman. Mr. Kuniholm identified me for the record.

Mr. WILLIAMS. All right.

Mr. HECKMAN. I engaged in this correspondence with the Secretary's office and maybe I can help some. This first statement that it is the Secretary's view that the color additives amendment would not apply to coloring materials in food wraps that do not migrate from the wrap to the food, is sort of a basic universal type statement that was made to us a long time ago and he is, in effect, repeating that. I think we have no controversy over that at all.

Mr. AVERY. I am sure you do not.

Mr. HECKMAN. The second point is the one over which we engaged in the exchange of correspondence, and actually it is my opinion, at

least at this time, that our only difference lies in the question of whether or not this letter in the record will suffice to establish the position that we enunciate in our statement today, or whether the statute should be changed to accomplish that purpose.

I do not think we have any basic disagreement on the substance of the matter, only on the form as far as I know.

Mr. AVERY. That certainly clarifies your stand.

I have no further questions.

Mr. WILLIAMS. Mr. Nelsen.

Mr. NELSEN. No questions.

Mr. WILLIAMS. Mr. Keith.

Mr. KEITH. One question, Mr. Kuniholm. Does the absence of anything in your estimony commenting on the substance of the basic proposal indicate that you concur in the detailed nature of that basic proposal?

In other words, do you differ with the previous witnesses today?

Mr. KUNIHOLM. I would say, sir, that it is our hope that our materials will remain subject to the food additives amendment, and not be affected by the color additives amendment, and so we have not felt it necessary to comment at all on the color additives amendment.

Mr. KEITH. Well, where there is color transfer through the packaging process, you would become subject to the color additive amendment?

Mr. KUNIHOLM. That is correct.

Mr. KEITH. And do you concur with the form of the amendment as it is proposed in this bill, or do you concur in the observations made by other members of your industry?

Mr. KUNIHOLM. I would say that in general with the latter group. It would be those with which we concur.

Mr. KEITH. Thank you.

Mr. WILLIAMS. Any further questions?

Thank you very much.

We have one more witness scheduled, and except for the gentleman representing the Food Additives Committee of the Manufacturing Chemists, that is all we have scheduled for today.

Mrs. Starkey, I noticed that your statement is only about a page and a half long, so we will try to accommodate you.

STATEMENT OF MRS. IONE DENNIS STARKEY, HOMEMAKER

Mrs. STARKEY. I am Ione Dennis Starkey, homemaker, 2480 16th Street, NW., Washington, D.C.

Mr. WILLIAMS. Mrs. Starkey, at this point let me ask you, you do not represent any association?

Mrs. STARKEY. No, indeed.

Mr. WILLIAMS. You are one of "John Q. Public"?

Mrs. STARKEY. I am just here for the benefit of myself, my relatives, and my friends.

Mr. WILLIAMS. Fine. You may proceed.

Mr. AVERY. Mr. Chairman, may I comment for the minority, it is refreshing to have someone of your capacity to testify.

Mrs. STARKEY. I have been reading the newspapers, sir, and they say the public is certainly not behind the Food and Drug because they

are so uninformed about this thing, and I certainly believe that an informed public would be a very concerned public in this issue, and I am very sorry that the newspapers and the radio and the TV throughout the United States are not carrying a series of articles, the same as our Washington Post just recently has been carrying, because I think that you would have probably been swamped with mail from your constituents if they were. But I think that this thing has sort of been concentrated in Washington and it is just unfortunate to that extent.

I am a homemaker. This covers many talents in our modern world—one of these the ability to think for myself—balanced by my husband prodding me to see both sides of any question. I am most appreciative of this opportunity to express my views on the color additives to our food and cosmetics.

I am not antivivisectionist, but why spend taxpayers' money and all other money collected by various drives for each part of the human body to continue research and experiments on animals if the findings cannot, or will not, be applied to humans? It would be well to keep in mind, people have a choice in the smoking controversy, also how many different colors and shades of lipstick any one woman feels she has to wear, but the public has no choice when it comes to eating and drinking of beverages.

Each vested interest will come before this committee and argue the little bit of their additive or chemical will do no harm, even making the ridiculous assertion that a woman would have to eat 100 lipsticks a day—or only 1 percent of our chickens were affected—which turned out to be 11 million chickens.

I personally am rather sick of this numbers game. How silly can these arguments get? In begging the Food and Drug Administration to set tolerance levels on each little item, whether it is color additive, preservative, or animal food additive—this can be a very dangerous thing.

I quote from a series of articles run in the Washington Post and Times Herald, starting February 1, 1960, part IV:

> FDA guards foods from toxic additives; FDA would turn down application to use an additive if it were felt humans were already consuming that additive in another food, as much as they could stand.

This reminds me of an old song:

> Who takes care of the caretaker's daughter while the caretaker's busy taking care? Gee, oh gosh, oh gee, that's what worries me.

I am sure the FDA is doing the best it can with the tremendous load it is called upon to carry, but I certainly do not want my life to possibly hang on the human fallibility of a busy chemist who just may not happen to remember I may have eaten one type of food with my lunch and be sure not to give me a double dose with my dinner.

It has been clearly shown in the hearings leading up to this, by the Delaney hearings, and this amendment, the cumulative effects of all this. I myself find every week when I go out to market, another source of natural food has been absorbed by big business. I believe it is particularly important to clamp down on the main source of all this wholesale treatment of our food supply, since most small farmers have been eliminated. The shopper, really informed and

looking for a plain food with nothing added or taken away, is like Diogenes with a lantern unable to find an honest man.

As an American with deep concern for the future, particularly the health of the children, I can only close with this latest poem, which I call—

THOSE WHO DANCE

Wake up America—let's look alive—
Is it only your car or your body you drive?
Fed on "tampered with" food, plus less and less sleep—
No wonder poor thing is a broken down heap—
Let's get with it now: stop pressing our luck—
Perhaps ancient Romans tried to make a "fast buck."
That empire rose high then crumbled and fell—
Shall we emulate them—pave our own road to—

a word that rhymes with "fell."

Let's be more alert or soon we shall be—
A memory recalled—Late, great democracy.

I wish to express my thanks to the committee for granting this opportunity to express my views.

Mr. WILLIAMS. Thank you very much. Any questions? Mr. Keith.

Mr. KEITH. I think in view of the fact that poetry has been quoted here today, and the concern expressed by this lady from Washington, she might be reassured by another bit of poetry, one or two verses of which I would like to quote. It might be entitled, "What, no cranberries?"

In these days of indigestion, it is ofttimes a question,
As to what to eat and what to leave alone.
For each microbe and bacillus has a different way to kill us,
And in time they always claim us for their own.

There are germs of every kind, in every food that you can find,
In the market or upon the bill of fare,
Drinking water is just as risky as the so-called deadly whisky,
And it is often a mistake to breathe the air.

Some little bug is going to find you some day,
Some little bug will creep behind you some day.
Then he will send for his bug friends and all your earthly trouble ends.
Some little bug will get you some day.

There are several more verses to this. [Laughter.]

Mr. WILLIAMS. Yes, ma'am.

Mrs. STARKEY. I think Mr. Keith's observation is very clever, and I read that poem many, many years ago. Mine happens to be quite original.

But the idea is that we know that our foods do contain all these things that he just quoted in his poem, but they also contain things that we have been hearing about here, that I think are much more dangerous than the little bugs he is speaking of. In fact, I think the chemicals that have been added to our food have succeeded in killing about everything that could possibly come near the food, including the people consuming it, because it is entirely sterilized to the extent that not even the friendly bacteria is left in it and we do know some little bugs are friendly, and this is quite a departure from the normal setup of our life in relationship to the earth, and unless the agriculture takes note of this, and is much more discriminate in its use of these chemicals, I do not believe any of us will even be here to read poetry or listen to it some of these days.

Thank you very much.

Mr. WILLIAMS. Mrs. Starkey, this committee and the Congress, of course, are primarily concerned with the public interest and public welfare, and I assure you, we will do our most to uphold that.

Mrs. STARKEY. I just want you to know that some of the public are watching you. [Laughter.]

Mr. WILLIAMS. Thank you very much.

The committee will adjourn until 2 o'clock this afternoon.

(Whereupon, at 12:15 p.m., the hearing was recessed, to reconvene at 2 p.m.)

AFTERNOON SESSION

(The hearing resumed at 2 p.m., Representative Roberts presiding.)

Mr. ROBERTS. The subcommittee will please be in order.

Our next witness is Mr. Kenneth E. Mulford, who will testify on behalf of the Manufacturing Chemists Association, Inc.

Will you come around, Mr. Mulford, and we will proceed with your statement.

Mr. MULFORD. Thank you.

STATEMENT OF KENNETH E. MULFORD, CHAIRMAN, FOOD ADDITIVES COMMITTEE, MANUFACTURING CHEMISTS ASSOCIATION, INC.

Mr. MULFORD. Mr. Chairman and members of the committee, my name is Kenneth E. Mulford. I am chairman of the Food Additives Committee of the Manufacturing Chemists Association, and I am appearing on behalf of that association. The Manufacturing Chemists Association is a trade association composed of 181 corporate members which are engaged in the manufacture of chemicals.

Among the products sold by chemical producers are products which are used in the manufacture of drugs. These drug uses are subject to the controls and procedures of the drug provisions of the Federal Food, Drug and Cosmetic Act. Other products produced become food components, either intentionally to perform some function in the food or unintentionally, as, for example, migrants from food wrappers.

Both the intentional and the unintentional food components are subject to the controls of the Food Additives Amendment of 1958, with the exception of coal tar colors which are presently controlled by the coal tar certification provisions of the Food, Drug and Cosmetic Act. Still other products produced by the chemical industry are pesticide chemicals. These pesticides are subject to the controls of the Federal Insecticide, Fungicide and Rodenticide Act, and, in addition, raw agricultural commodities containing residues of these petsicides are subject to the controls of the pesticide provisions of the Food, Drug, and Cosmetic Act. Still other products of the chemical producers find their way into cosmetics, which are also subject to certain controls of the Food, Drug, and Cosmetic Act.

Those sections of the food, drug, and cosmetic law which deal with drugs, food components and raw agricultural commodities containing pesticide residues are designed to permit the Secretary of Health, Education, and Welfare to establish safe tolerances for the sub-

stances used in these products. However, the coal tar color certification provisions of the act have not been so interpreted. Consequently, it is necessary to establish safe tolerances for coal tar colors.

The Manufacturing Chemists Association is in favor of the principle of such an amendment. Moreover, the association believes that all colors that are intentionally added to foods, drugs and cosmetics for the purpose of coloring the food, drug or cosmetic should be subject to the proposed color additive law. We believe, however, that any amendment of the Food, Drug, and Cosmetic Act should make it clear:

(1) That substances cleared under the food additives law, whether this be because they are generally recognized as safe, because of prior sanction or approval, or by reason of a regulation resulting from a petition, should not have to be cleared under a color law, and

(2) That incidental additives should remain under the food additives law even though they may be color utilized in the food wrapper with minor portions of the color migrating into the food, and this will be true whether the color is coal tar or not, and

(3) That substances falling under the Insecticide Act and the pesticide chemicals amendment to the Federal food, drug, and cosmetic law should not have to be cleared under a color additive law even though their use might result in improved natural color of fruits and vegetables.

With these principles in mind, I should like to direct your attention to S. 2197, the bill which was passed by the Senate. I realize that H.R. 7624 is the bill which was introduced by the chairman of this committee at the request of the Secretary of Health, Education, and Welfare, but for the sake of clarity, I have keyed my statement to the Senate bill.

Now, I should like to draw your committee's attention to the extreme breadth of the definition of color additive in this proposed legislation. The definition is to be found in section 101(c) of S. 2197. For reasons to be explained, we believe that the definition includes or could be interpreted as including many of the substances which are already subject to the existing provisions of the Food, Drug, and Cosmetic Act.

You will note that the definition consists of several paragraphs, the first of these at the bottom of page 2 of S. 2197 under (1)(A) reads as follows:

> (1) The term "color additive" means a material which—
>
> (A) is a dye, pigment, or other substance made by a process of synthesis or similar artifice, or extracted, isolated, or otherwise derived, with or without intermediate or final change of identity, from a vegetable, animal, mineral, or other source,

That is the first subparagraph. This paragraph, while some five lines long, actually means any substance.

The second portion of the definition under (B) in S. 2197 is:

> (B) when added or applied to a food, drug, or cosmetic, or to the human body or any part thereof, is capable (alone or through reaction with other substance) of imparting color thereto;

The point I should like to make with respect to this paragraph is that practically all substances are "capable" of imparting color. This is particularly true in view of the last paragraph of the defini-

tion which states that color includes black, white, and intermediate grays.

Most food components subject to the Food Additives Amendment of 1958 have some color and hence scientifically are capable of imparting color to the food to which they are added. It would appear, therefore, that in addition to complying with the provisions of the food additives amendment, a person proposing the use of such a component would find himself also subject to compliance with the proposed color additive amendment because of the breadth of the definition in section 101(c) of S. 2197.

If such a food component had a function other than coloring, and, in addition, as a secondary purpose, imparted some color, it would be subject to all of the pertinent provisions of the color bill. Even though the sole purpose is unrelated to coloring, the proponent would still have to ask the Secretary for a regulation under the color law.

This is because of the language following paragraph (B) quoted above, which language reads as follows:

> except that such term does not include any material which the Secretary, by regulation, determines is used (or intended to be used) solely for a purpose or purposes other than coloring.

As a further illustration of needless regulation which would be required under the present color additive definition, we can take the case of those food components that have been cleared under either the "generally recognized as safe" provision of the food additives law or under section 409(a) of the food additives law or by reason of their having had a prior sanction or approval under the food additives law.

In our opinion, since most all of these materials would be capable of imparting color, it would be necessary to resubmit them to the Secretary at least for the purpose of obtaining a regulation to the effect that they were intended solely for a purpose or purposes other than color.

The Manufacturing Chemists Association believes that such duplication of regulations is undesirable and unnecessary. The association believes that the color additive definition should be restricted to eliminate from the color additive bill all food components unless they are primarily for the purpose of imparting color to the food itself.

Other substances cleared under the food additives law, whether this be because they are generally recognized as safe, because of prior sanction or approval, or by reason of a regulation resulting from a petition, should not have to be cleared under the color law.

To accomplish this, the association recommends the following change in the definition of color additive; that paragraph (B) be replaced with this paragraph (B):

> (B) is added or applied to a food, drug, or cosmetic, or to the human body or any part thereof, primarily for the purpose of imparting color thereto;

(The exception that now follows (B) would be deleted entirely.)

I am authorized to say to this committee that the foregoing amendment to the definition is endorsed by the Synthetic Organic Chemical Manufacturers Association of the United States, a trade association having a membership of about 83 chemical companies, some 40 of which are active in the color field.

It has also been proposed to your committee by the National Agricultural Chemicals Association that materials subject to the pesticide chemicals amendment to the Federal Food, Drug, and Cosmetic Act be excluded from the provisions of the color additive law, as they are now excluded from the food additives amendment.

This proposal would add to the foregoing definition in paragraph (B) the following exception:

except that such term does no include a pesticide chemical in or on a raw agricultural commodity or a pesticide chemical to the extent that it is intended for use or is used in the production, storage, or transportation of any raw agricultural commodity.

The Manufacturing Chemists Association supports the inclusion of this exception in the definition.

As your committee knows, the proposed color additive law would control many colors not heretofore controlled by the coal tar provision of the act. Thus, many common foods which are added primarily for coloring, such as carmel and paprika, would, as we see it, be subject to the color additive bill.

The Manufacturing Chemists Association sees no reason why such materials should be subject to all the listing and other provisions of the color additive amendment and proposes in this connection a separate amendment to the color definition to exempt those color additives are generally recognized as safe. This proposed amendment is as follows and in our opinion this could be an additional exception follow-the pesticide exception just discussed:

and except that such term does not include a substance generally recognized, among experts qualified by scientific training and experience to evaluate its safety, as having been adequately shown through scientific procedures (or, in the case of a substance used in foods, drugs, or cosmetics prior to January 1, 1960, through either scientific procedures or experience based on common use in foods, drugs, or cosmetics) to be safe under the conditions of its intended use;

Another recommendation of our association has to do with certain procedural revisions of the proposed bill. Your committee will recall that in the food additives law certain time limitations are established within which the Secretary is required to act on petitions for approval. These time limitations are a first 90-day period following filing of the petition, which may be extended to not more than 180 days if the Secretary deems such extension necessary.

In practice, additional delays occur when a petitioner is notified that his petition must be rejected unless it is withdrawn and refiled. Such a refiling, of course, automatically establishes a new 180-day period. The Manufacturing Chemists Association nevertheless recommends that a time limit for action on petitions be inserted in the bill.

The association proposes the following amendment be inserted at the end of section 706(d) of the Food, Drug, and Cosmetic Act, as proposed to be amended by section 103(b) of S. 2197:

Provided, however, That (1) notice of any regulation proposed by a petitioner under section 701(e)(1)(B) of this act shall be published in general terms by the Secretary within 30 days after filing; (2) the order of the Secretary with respect to the proposed regulation shall be issued within 90 days after the date of filing of the petition, except that the Secretary may (prior to such 90th day), by written notice to the petitioner, extend such 90-day period to such time (not more than 180 days after the date of filing of the petition) as the Secretary deems necessary to enable him to study and investigate the petition.

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In section 706(b)(1) as proposed by section 103(b) of S. 2197 entitled "listing of colors" it is our understanding that the Secretary shall actually list the colors and not merely provide regulations covering the listing.

We suggest, therefore, that this language be made explicit so as to read:

The Secretary shall, by regulation, separately list color additives for use in or on food—

and so forth.

The Manufacturing Chemists Association recommends that, with one exception, section 706 of the bill be in the form of S. 2197 as passed by the Senate, after the endorsement by the Department of Health, Education, and Welfare.

There are certain differences between the two bills and we prefer S. 2197. However, there is this exception which pertains to section 706(b)(5) of S. 2197 which lists certain factors which are to be considered by the Secretary in determining whether or not a proposed use of the color additive is safe.

The fourth of these factors under subparagraph (D) refers to practicable methods of analysis for determining the identity and quantity of the color additive in or on any article of food, drug, or cosmetic. This language differs from the corresponding language in the food additives amendment by the addition of the words "identity and."

The addition of these words could be interpreted as indicating a need for a method which would distinguish this color additive in or on the food from all other possible substances in existence. Such identification of minute quantities of the material in or on the food will in most cases be impossible. It is submitted that the Food and Drug Administration has ample authority to examine the color additive as such to make sure that it is what it purports to be. This is particularly true where the color additive is certified.

We recommend that the words "identity and" be deleted to make the pertinent analytical methods the same as those in the food additives amendment.

We also respectfully direct your committee's attention to certain portions of section 203 of S. 2197 which relate to provisional listings of commercially established colors. The purpose of this section is stated to be the making possible on an interim basis for a reasonable period the use of commercially established color additives through provisional listings.

It specifically provides that the listing must be consistent with the public health and in section 203(1)(E) of S. 2197 that such provisional listing may be terminated if necessary to protect the public health. Included in the colors to be listed are those which are "deemed to be provisionally listed" by reason of their having been certified under the present law or if not subject to certification under the present law, in use prior to enactment of the new color additive law. See section 203(b) of S. 2197.

These provisional listings are for the purpose of enabling the manufacturer or user to develop data to establish the safety of the product and the listing can also be terminated if the scientific investigations are not pursued to completion in good faith. See section 203(a)(2)(B) of S. 2197.

Notwithstanding these safeguards, section 203(d)(3) of S. 2197 provides that interested persons must submit data to establish a reliable basis for including the color additive in the list. The very purpose of the provisional listing is to permit the interested party to develop such data. The Secretary has ample authority to refuse provisional listing if it is not consistent with the public health. He may also terminate such listing if adverse information is developed or he may do so in the event that the investigations are not going forward in good faith.

The provisions of 203(d)(3) of S. 2197 may entirely vitiate the purposes of the provisional listing section and, therefore, this association recommends that subparagraph 3 be deleted.

Aside from several amendments added by the Senate, there is, as this committee knows, a significant difference between S. 2197 and H.R. 7624: The House bill has an exception to the authority given to the Secretary of Health, Education, and Welfare to establish tolerances for color additives where they are safe at the level of intended use. This exception, of course, is the so-called cancer clause.

The Manufacturing Chemists Association has always stood for the principle that nothing should be included in food that is any way harmful to public health at the level of usage. We believe this principle is sound regardless of the type of disease that is involved. The main reason advanced for singling out this particular disease in the bill is lack of agreement among scientists on whether or not a safe level can be determined for carcinogens.

Secretary Flemming stated that if and when scientific advances enabled tolerances to be set for carcinogens, he would return to Congress and recommend elimination or appropriate modification of the cancer clause.

The basic philosophy of the Food Additives Amendment of 1958 as finally enacted and the pending House color additives bill, with the notable exception of the cancer clauses, is that the Secretary should have the authority to determine whether or not chemicals can be safely added at the levels of intended use. We believe that this principle, which recognizes that as a matter of sound administration the Secretary should have the authority to keep abreast of developments in scientific research, should apply across-the-board. To require the Secretary to return to Congress when a scientific breakthrough occurs injects inflexibility which will act as a deterrent to further research.

Moreover, while it may be true that there is lack of agreement among scientists as to whether a safe level can be set for all carcinogens, it has been indicated that the cancer clause could be interpreted as excluding materials for which safe levels can be set. Thus, if a material fed in massive doses produces a primary adverse effect which, in turn, produces cancer as a secondary effect, the material would appear to be banned even though it is not a carcinogen and can safely be fed at levels which produce neither the first nor the second effect.

Furthermore, it is quite possible to devise experiments with many common materials in such a way as to produce cancer in test animals.

In this connection I call your committee's attention to an article entitled "Carcinogenic Effect of Hen's Eggs as Part of the Diet in Mice" in The Proceedings of the Society for Experimental Biology and Medicine, Volume 102, No. 3, December 1959. The work reported in this article appears to establish that hard boiled eggs when fed to mice result in cancer.

If a harmless staple article of the human diet such as eggs could cause cancer in test animals, then the mandatory application of a cancer clause to color or other food additives used in very small amounts would appear to be scientifically unsound.

Another problem encountered with an inflexible mandatory cancer clause is the question of what constitutes a zero amount. In Secretary Flemming's excellent presentation to your committee, considerable emphasis was laid on the accuracy of the method used to determine that there are no residues of stilbestrol in meat. It was stated that the analytical method employed is good down to two parts per billion. Also, it was stated that 80–85 percent of beef cattle are now fed feed containing stilbestrol. If the analytical method is improved say down to one-half part per billion and it turns out that stilbestrol is found in the meat at this level, then meat that was legal yesterday may become illegal tomorrow.

I have endeavored to illustrate by a few examples the difficulties inherent in an inflexible cancer clause. Many other unforeseen problems would undoubtedly arise if such a clause is included in the law. And again I should like to emphasize the inherent deterrent to the conduct of new research that would occur if utilization of the research results would require a change in the statute.

I want to reiterate and emphasize the fact that our association has always stood for the principle that nothing should be included in food which is any way harmful to public health. We further believe that the Government, through the Secretary of Health, Education, and Welfare, and the Food and Drug Administration, have the obligation to protect the public from inadvertent use of harmful substances.

We believe the Food Additives Amendment of 1958 gave the Government ample authority to provide this protection without the cancer clause that was included in it at the last minute. And we believe the proposed color bill, with the amendments we have proposed, would give equally ample authority without the cancer clause.

In other words, not only do we believe such a clause is unnecessary, but for the reasons we have previously stated, we believe this clause does not measure up to the standard of the rest of the proposed legislation and former legislation in this field, and furthermore, it is scientifically questionable.

We doubt the desirability of including an inflexible provision which denies discretion and scientific judgment. This is especially true in the absence of adequate scientific data showing it to be impossible to develop safe tolerances for the limited use of all beneficial substances when used in excessive or exaggerated amounts may produce this disease. We should like to see questions concerning safety resolved by the findings of a group of competent scientists which can review all relevant data and make appropriate recommendations.

We want to make it quite clear to this committee that we do not make any of these suggestions in order to permit the use of harmful substances. We make these proposals in the interest of a better law, better administration, and better protection for the public.

Thank you very much, Mr. Chairman, for the opportunity to present these views on behalf of the Manufacturing Chemists Association.

Mr. ROBERTS. Thank you, Mr. Mulford.

I note that the association which you represent was founded in 1872. How many active members of the association are there at the present time?

Mr. MULFORD. Of MCA, 181, I believe.

Mr. ROBERTS. 181? I suppose that they are in practically every section of the country?

Mr. MULFORD. That is correct.

Mr. ROBERTS. You mentioned at the end of your statement that you would like to see a scientific commission set up to study this problem. Do you have any suggestions as to how that commission should be set up, so far as its membership is concerned?

Mr. MULFORD. Well——

Mr. ROBERTS. Would it be a commission set up by the Congress or to be set up by the industry, or what is your thinking on that situation?

Mr. MULFORD. Our thinking is that it should be set up and it should be an objective commission. For example, I think that, whether this would be by statute or not, we have not thought this out, but we do know, for example, there are organizations like the National Research Council or the National Academy of Sciences, which is really set up to advise the Government on scientific matters.

Mr. ROBERTS. You think it should be a permanent body?

Mr. MULFORD. We have primarily in mind here that it should be set up sufficiently permanently that it could establish for Congress what type of limitations, if any, are needed and whether or not the law actually does need them.

On this question of inability of scientists to set tolerances for carcinogens, there are so many scientific views. I would like to point to you, for example, that the word "carcinogen" is not even used in the cancer clause in the food additive amendment. It is not in there, so you have questions of what are carcinogens, and which ones are the ones that we are talking about when we say that, with present scientific knowledge a tolerance cannot be set for them.

A scientific study of questions such as this, and I think with some legal guidance as to how this could be inserted in the law, if it is to be inserted.

Mr. ROBERTS. I was interested particularly in one statement you made and one example that you supplied with reference to the addition of certain foods for the purpose of coloring, I believe you used an example of caramel, for instance, and I understand that it is your contention that under the House bill the way it is written at the present time that these common foods like caramel and paprika would be subject to this bill.

Mr. MULFORD. Yes. The way it is presently worded. There is one exception to that. The bill says that if such a material is on the published, generally recognized as safe list in the Food Additives Amendment of 1958, then it would not fall under the color bill.

Now, the difficulty with this is—and I might say perhaps caramel was not too good an example, because it may be that it has been published—that the Food and Drug Administration has taken the position that there are many things generally recognized as safe that there is no need to put on the published list. Sugar, I am pretty sure,

paprika, for example, is not on the list. That type of thing which is generally recognized as safe, they do not list.

Then they come to things that they are not quite sure as to whether they are generally recognized as safe. They think probably they are, so they have to reach a decision on this. And these are the ones that they circulate to the scientists and publish on the list.

So this exemption in here of things that are on the published list of generally recognized as safe, is not adequate because all the things would not be published.

Sugar can be used to color things.

Mr. ROBERTS. This is a rather interesting question. You mentioned the fact that the hard-boiled eggs might cause cancer when fed to mice. I believe that was on page 13. One question that has been sent to the Chair was whether or not the chickens that laid the eggs were fed stilbestrol? Do you have any opinion on that one?

Mr. MULFORD. No; I do not.

Mr. ROBERTS. That is all that I have.

Mr. Younger.

Mr. YOUNGER. The reference you make on page 15 to competent scientists. Is there an inference there in your statement that the Food and Drug Administration do not have competent scientists?

Mr. MULFORD. No, sir.

Mr. YOUNGER. What was the purpose then, of saying you wanted a board outside of the Food and Drug Administration scientists? You mean that they issue self-serving declarations?

Mr. MULFORD. I think it should be an objective board. I think that, as was mentioned here this morning I believe by one witness, in some of these situations we run up against the fact that the scientific opinion is not controlling. It is the administrative and legal opinion that is controlling.

Mr. YOUNGER. That, I think, is probably an assumption. You speak of the Secretary issuing regulations. Of course, we assume that the Secretary, before he issues a regulation or a decision, that that opinion is backed by the scientists in his department. I doubt if the Secretary would go out on a limb just on his own opinion and issue rules. I at least hope we do not have government of that kind, and I was trying to get the difference in your opinion as to what are competent scientists and what the Department has as competent scientists.

Mr. MULFORD. I am certain that what you say is correct. When he issues a regulation this is in accord with competent scientific advice that he has. But there is the converse situation, where the competent scientist says this material is all right for use, and the administrative and legal side say, well, that does not make any difference, you cannot use it under the law anyway.

Mr. YOUNGER. Well, I can readily understand that and I appreciate very much the value of scientists. But scientists disagree just like lawyers do. We are finding that out now in the missile field. You can get about as many different opinions as you consult scientists in that field. I am afraid if we do not nail this down pretty well, we might get into the same kind of a bind as now. Scientists are not perfect and they do not all agree. You will agree with that, will you not?

Mr. MULFORD. I will agree with that. But I think there are many areas on this subject where they will agree.

Mr. YOUNGER. That is what we want to get at. I do not think there is any intention to do otherwise.

Your association did not object originally to the enactment of the Pure Food and Drug Act, did they? Did they appear before the committee in opposition?

Mr. MULFORD. Are you talking about the Food Additives Amendment of 1958?

Mr. YOUNGER. Yes.

Mr. MULFORD. We supported that amendment.

Mr. YOUNGER. You did.

Mr. MULFORD. However, as you know, the cancer clause was added on the floor of the House and there was no opportunity to discuss it or express any views.

Mr. YOUNGER. Did it go to the Senate after that? I do not recall the history. I think it went to the Senate.

Mr. MULFORD. My recollection is it went to the Senate after.

Mr. YOUNGER. And you did not appear before the Senate on the same side that you are appearing here today?

Mr. MULFORD. I am corrected. As I understand it, there was no hearing, and I think this was agreed on in conference. The Senate bill did not have it in, either.

Mr. YOUNGER. I see. That is all, Mr. Chairman.

Mr. ROBERTS. Mr. Rogers.

Mr. ROGERS of Florida. Mr. Chairman, I am sorry to be late for this testimony. As I understand it, Mr. Mulford, you feel there are not sufficient scientific personnel within the Food and Drugs Administration to make these determinations?

Mr. MULFORD. No, I would not say that. I think that primarily that if there is going to be any cancer clause, there should be a commission of objective scientists, and I think we have such people, you have places where you can draw on them, to study this matter and see what, if anything, should be written in the law or what types of situation you can set tolerances for, and what types of situations you cannot set tolerances for.

I feel very strongly that because of, I would not say because of disagreement among scientists, but because of lack of knowledge as to whether you can set tolerances for some very severe carcinogens, that this thing creeps over and becomes a reason for writing a flat prohibition against a lot of things that you can set tolerances for.

In other words, to use one thing as an example, to prohibit a lot of other things.

Mr. ROGERS of Florida. That is what I thought the hearings would establish when the question is raised of the color. Would that be determined? I thought that was the purpose of this, which was to have scientific information and make such determination. Is that not the purpose of the testing, the hearing?

Mr. MULFORD. That is correct. But if you put an absolute prohibition in the law, and the scientists come up with a conclusion, of which we have examples, that this is perfectly all right for use in food, it is not a carcinogen, and then the Administrator and his legal advisers look at the law, and say, "It does not make any difference whether it is all right or not, because the way the law is worded, we cannot allow it anyhow."

Mr. ROGERS of Florida. If it is cancer producing?

Mr. MULFORD. Yes. And as I pointed out in my testimony, we have several practical situations. The Abbott Laboratories witness this morning mentioned one, where with very massive levels one effect is produced. This in turn produces a secondary effect. If you eliminate this first effect, nothing happens at all.

Mr. ROGERS of Florida. Then you are not so much concerned with getting more scientists established because you can get a hearing but simply you want the law changed to where we can allow certain amounts and not just a flat prohibition; that is really what you want, is it not?

Mr. MULFORD. Flexibility, that is right.

Mr. ROGERS of Florida. Thank you.

Mr. ROBERTS. Mr. Curtin.

Mr. CURTIN. No questions, Mr. Chairman.

Mr. ROBERTS. Mr. Hemphill.

Mr. HEMPHILL. I was interested in the question Mr. Rogers put to you. So far as the cancer clause is concerned, the reason why we are all concerned about this situation now is, is it not, that the rise of cancer in the United States is a source of concern to all of us, whether it is in your business or my business.

Now, do you not think the American people want us to put some sort of cancer clause in there? And if the definition as it now stands is obnoxious, have you some suggestion that would give a definition which would protect the public in the cancer clause?

Mr. MULFORD. Well, first, in reply to your question, which is, I realize, really not a proper reply, I want to emphasize the fact that in the Senate report on the food additives bill and in the letters from the Secretary's office with respect to the original Senate version of the food additives bill, they said: "This clause is not necessary."

This came right out of the Secretary's office. The bill protects against this anyway. So you have the protection.

Now, if you are going to put something in, we feel that we do not know enough about what to put in and it ought to be studied by a scientific commission to come up with something and say, "With this class of material there ought to be flexibility and with that class of material there should not."

Maybe something like that. But I just do not think we have the information.

Mr. HEMPHILL. Of course, pending the institution of such commission, we would have to legislate and set up a commission to arrange for personnel, the necessary administration, the tests that would be used, and in the meantime what responsibility does Congress have in this field to try to define by a cancer clause, as in effect, they are recommending in the House bill?

Mr. MULFORD. We feel that since the bill gives adequate protection regardless of whether or not it is in, that there is no need to put it in.

Mr. HEMPHILL. Well, the question occurs to me—and I am interested in your answer—just why the Secretary would recommend the House bill in the form if he did not think it was necessary for the protection of the American people?

Mr. MULFORD. Well, all I can say is that the year before, why, his view was to the contrary.

Mr. HEMPHILL. I beg your pardon?

Mr. MULFORD. The year before, the views from the Department were to the contrary.

Mr. HEMPHILL. Well, I am glad to see that any department of Government is flexible enough to change if it is in the interest of the American people, and I was impressed by the statement of the Secretary and I believe he is sincerely concerned over this thing and now the responsibility is passed on to us. Suppose we do not put in a cancer clause; do not enact the House bill; and then by virtue of that, the Secretary is deprived of authority which he feels is necessary, then have we said to the American public, "We have refused to take this recommendation to give you the protection that a man who is charged with the responsibility of administering it says he needs in the form of legislation or authority"?

Mr. MULFORD. My impression is that the principal reason for this is that he would just like to have Congress reaffirm for him his policy of not allowing these materials in until such time as some of these scientific questions are resolved. Unfortunately, to me it seems, he ought to accept that responsiblity, because if you do this, using this language, you are freezing a lot of things that can be beneficial substances that would be used.

I believe that with many of these problems it is true, maybe it will be 5, 10 years before we can get satisfactory scientific answers, but on the other hand, we certainly feel that there are many of them that could be cleared up today in certainly very short order, if we did not have this mandatory per se doctrine of the Delaney clause in the food additive amendment.

Mr. HEMPHILL. May I direct your comment to another feature which I have been concerned with? Suppose those who are engaged in the various facets of the farming industry such as dairying or growing grains for consumption either by animals or going into flour, suppose those people use some preventive or insecticides or coloring or something that they think is all right, and once their product is put on the market, suddenly they have some Executive order or administrative ruling that the product is no good. How are they going to escape the economic impact of such a regulation? Would you like to comment on that?

Mr. MULFORD. This is another reason we advance for not having this absolute prohibition written in the law.

Now, I think that if you do, it places a premium on ignorance.

You take this stilbestrol thing, and we have a method now that is good down to two parts per billion. The Secretary's position is, I would not say this is right, but his position is, if there is any in there at all, why, it is illegal.

Now, under those circumstances, it is not to industry's interests or anybody else's real interest, to be frank with you, to develop a method down to a half part per billion and try it out. If you find this out, we do not believe there is any harm in this at a half part, and where do we wind up? We used to talk about 10 parts per million. Now, we are talking about two parts per billion, and I do not know what it will be next year, maybe one part per trillion.

Mr. HEMPHILL. What experience does the industry have to suggest any tolerances to the Secretary?

Mr. MULFORD. I am sure that the people that make this material are confident they could demonstrate that the material at these extremely low levels, low trace levels, is entirely safe.

On the other hand, they may be confronted with the fact, "Well, it does not make any difference whether it is safe; the law says you cannot have anything of this nature in here so you just cannot have it."

Secondly, some of us who have very beneficial products of this nature that we would probably like to offer would not want to apply for approval of their use. We would not want to become engaged in a hearing, and so forth, over this Delaney amendment.

There are other things, we feel, that are better to do.

Mr. HEMPHILL. What you say interests me especially because I saw not long ago an article which said that the cause of cancer had been determined in some instances to be cumulative. Not only can such be traced to perhaps something which we may be concerned about today but there might be other causes. I can imagine such things as somebody becoming debilitated or rundown as we call it, or perhaps we have even in the legal profession had studies made of traumatic studies of cancer which have been sustained by reports in many instances, some of which I am familiar with.

Now, I am mindful of all of that, but going back again, if you place yourself in our position—and I am sorry I have talked so long—of having responsibility to the American people, which the man occupying a Cabinet position of great stature in this Government today has said, "We need your help on the congressional level to give us the legislative direction or authority to do something in the interests of the American people"—we are going to have to justify some reason not to follow his advice, remembering that he has conscientious responsibility, the President of the United States having selected him to be his adviser in that field, and that concerns me greatly in trying to determine the merits or demerits of the legislation including the cancer clause and other clauses.

I hope you see our problem.

Mr. MULFORD. Yes.

Mr. HEMPHILL. And I am sympathetic with yours.

Thank you, sir.

Mr. ROBERTS. The gentleman from Nebraska.

Mr. BROCK. No questions.

Mr. ROBERTS. This will conclude the hearings for today, and the Chair will state that the hearings will be recessed until 10 a.m. tomorrow.

(Whereupon, at 2:55 p.m., the hearing was recessed, to resume at 10 a.m., Thursday, February 11, 1960.)

COLOR ADDITIVES

THURSDAY, FEBRUARY 11, 1960

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The committee met, pursuant to recess, at 10 a.m., in room 1334, New House Office Building, Hon. Oren Harris (chairman of the committee) presiding.

Present: Representatives Harris, Mack, Roberts, Rhodes of Pennsylvania, O'Brien of New York, Moss, Dingell, Kilgore, Rogers of Florida, Hemphill, Brock, Younger, Glenn, Nelsen, and Keith.

Also present: Representative Barr of Indiana; George P. Larrick, Commissioner, Food and Drug Administration; and W. E. Williamson, chief clerk.

The CHAIRMAN. The committee will come to order.

In resuming the hearings on the proposed amendments to the Federal Food, Drug, and Cosmetic Act, referred to as the color additives amendments, the first witness will be our colleague and friend from Utah, the Honorable David S. King.

We would be glad to hear you, Mr. King. You discussed this matter with me a few days ago and I assume you have in mind a resolution which you recently introduced, more so than the specific provisions of the pending bills.

STATEMENT OF HON. DAVID S. KING, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF UTAH

Mr. KING. Mr. Chairman, I am here talking in favor of the Delaney amendment, but in my prepared statement I do make reference to the bill about which you and I had a discussion. I tried to bring the two together.

The CHAIRMAN. Yes. Very well. We are glad to have you, and you may proceed.

Mr. KING. Mr. Chairman and distinguished colleagues, I am grateful to have been granted this opportunity to testify in your hearings on the proposed color additives legislation.

My remarks will be brief and I will confine them principally to one point. I strongly feel that any color additives legislation which is enacted by the House in this session should contain that feature which has become popularly known as the Delaney amendment—a provision which prohibits the use of any substance which is shown by laboratory tests to induce cancer in animals.

As a Congressman, I can testify that my mail from citizens who are alarmed over additives has been extremely heavy. It has been

heavier than my mail on any other problem which has confronted the 86th Congress. And it continues to pour in.

This mail, without exception, reflects the same concern which I, as a father of seven children, feel, and have felt for years, over additives. We are concerned because scientific investigations thus far have not shown, either accurately or conclusively, what effects, under prolonged use, the additives have on consumers. I think no scientist or doctor could say right now, with unqualified conviction, that the additives are in no way connected with the rising incidence among Americans of cancer, heart disease, and other degenerative diseases.

It is my belief that the Congress should assume an active role in accelerating scientific studies on additives, to determine more fully and accurately their effects upon consumers. I have proposed a nonpartisan commission to spearhead such a program. Last summer, almost 2 months before Secretary Flemming's warning on contaminated cranberries ignited the national controversy over additives, I introduced H.R. 9150 to establish such a commission.

But until studies on additives—studies directed particularly at assessing their effects under conditions of lifelong use—have been carried much farther than they have thus far been carried, I feel the Congress has a responsibility to take a cautious stand on additives, and to act boldly to preserve the Delaney amendment and impose strict test requirements on additives. My mail clearly shows that the public expects Congress to keep a tight rein, including the Delaney amendment, on additives.

Of course, there are some, who for reasons of self-interest, and I might add here, I do not include all those who oppose this; I have talked to many persons whom I, of course, respect; but there are some who would like to see the Delaney amendment killed, and who argue that the scientists will never be able to show, beyond any mathematical chance of error, that a given ingredient or additive is perfectly harmless.

And so, they argue, since the odds already seem to favor the probability that colors and other additives which in enormous quantities have carcinogenic effects upon test animals are harmless in the amounts in which they are normally consumed, so why ban them—why not authorize their continued use until science can conclusively show that they are harmful.

I see no wisdom in that argument.

For the sake of illustration, suppose we were approaching a weakened bridge over a deep chasm. Bold highway signs said that the odds were 100 to 1 that the bridge would carry our car. "Use the bridge at your own risk," the signs told us. The signs gave us directions to a newer and better bridge a short distance away.

I think the sensible motorist would take the detour to the second bridge—even though the odds favored his getting safely across the weakened bridge.

We go out of our way almost every day to avoid risks in traffic; commonsense similarly dictates that we go out of our way to avoid risks on the use of additives.

This ought to be particularly true of the color additives. The colors which go into our foods and cosmetics are in no way essential to the public interest or the national security. If those which are

carcinogenic in any degree are kept out of the market, the consumers will easily get along without them. As a consumer, I can testify to that. And surely the manufacturers, too, would get along without them. Loss of the colors could not seriously hurt their competitive position, since the use of these colors would be lost equally to all of them.

While I readily recognize that I do not have the technical competence to say dogmatically that the Delaney amendment is necessary to the protection of the consumer, I want to give you the views of a man who does have this competence. He is Dr. Geoffrey Martin, M.D., executive secretary of the Kansas State Board of Health.

With your permission, I would like to insert into the hearing record letters which Dr. Martin wrote to the editors of Time magazine and the New Republic explaining the importance of the Delaney amendment. And preceding these, I would like, in conclusion, to read into the record a brief letter to me, in which Dr. Martin clearly spells out why this feature of the law is important to the consumer.

These are his comments:

DEAR MR. KING: I would certainly be very pleased to have you use my letters to Time and the New Republic in any way that you thought was helpful. I am enclosing carbon copies for your convenience.

Neither of these lay sufficient stress on a matter which is of paramount importance. When the 1959 amendment in effect abandoned the so-called per se principle there was created a literally impossible job for the Food and Drug Administration. It seems improbable that FDA will ever have the time and the money to establish and maintain through careful supervision tolerances on the innumerable chemicals which are not strictly necessary in the manufacture of food but which somebody would like to use. The Delaney amendment in effect defends one small area of consumer protection which previously was defended by the per se principle.

Thank you very much, Mr. Chairman. That concludes my statement.

The CHAIRMAN. Thank you very much, Mr. King, for your statement and appearance here.

(The letters referred to in Mr. King's statement from the Kansas State Board of Health follow:)

THE KANSAS STATE BOARD OF HEALTH,
Topeka, Kans., December 2, 1959.

EDITOR OF TIME,
Time and Life Building,
New York, N.Y.

DEAR SIR: That privilege of omniscience, so frequently exercised by Time, carries with it some responsibility for getting at all of the facts in particular cases. In my opinion, the stories on cranberries in the November 23 and 30 issues failed dismally in this respect. In addition, they were dotted with what in the legal trade is called suppressio veri and suggestio falsi in a manner highly insulting to your readers, and out of place in a periodical which supposedly exists to give straight information to its readers.

Secretary Flemming (according to the articles) creates "panic" and "pandemonium" by his "feverish warning." He is the central figure in stories headed "Bureaucracy" and "The Cranberry Boggle," and obviously he is a bad man. The president of Ocean Spray Cranberries, Inc., on the other hand, quotes from Scripture, is careful to protect consumers from contaminated cranberries, and puts it "straight" to Mr. Flemming. Plainly he is a good man. The public eating of cranberries by Messrs. Benson and Kennedy is a "feat of leadership"; they must be good men, too. But is it all really as simple as that? I should think that it was not.

The mechanism of the production of cancer is still unknown. It is known, however, that certain chemicals trigger the mechanism. Their mode of action

is obscure. Their effect is long delayed—perhaps by as much as 30 years. The actual incidence of the cancer produced is low. A few people may well be unusually susceptible to their effects. There is evidence that young children are more susceptible than adults. It is entirely possible that two such chemicals together are more than twice as dangerous as each alone.

Carcinogenic chemicals, and chemicals that may well be carcinogenic, are being created by chemists everywhere, every day, in increasing numbers. They have great attractions for the food industry as pesticides, weed controllers, fungicides, and preservatives, and are increasingly present in the foods we eat. Testing for carcinogenic properties is notoriously unreliable, and must be carried out on animals (usually mature mice and rats). Your news articles make derogatory mention of "mouse tests," as if this were a slender peg on which to hang the cranberry warnings. Would you be willing to go along with the logical extension of your attitude—that chemicals should not be approved for public consumption until tested on human beings over a sufficient period of time, say 50 years? This would be much better testing, as there is no guarantee that humans and mice will react in the same way.

It is customary in our time for manufacturers to test these chemicals on a small series of animals over a period of a few years, and then release them for general use if the animals survive in good health. Scientifically speaking, the manufacturer still does not know his chemical is safe, but he is shifting his experiments from a small number of laboratory animals to a much larger test group, the whole 170 million-odd inhabitants of the United States, and over a much longer timespan. If, with this larger test group, the chemical should prove to be carcinogenic, or toxic in some other way, after a few decades have passed, the manufacturer will doubtless make suitable apologies to the relatives of the deceased.

The dangers of chemical additives are fairly well known to professionals. In an unparalleled triumph of public over private interests, Congressman Delaney managed to have an absolute prohibition of carcinogens written into the basic Food and Drug Act. This does not by any means fully protect the consumer against such substances because, of course, regulatory measures can only be directed against known carcinogens—and knowing that a substance will produce cancer is a process full of dusty answers.

The job of administering the Pure Food and Drug Act is, in the United States, largely the province of the Food and Drug Administration in the Department of Health, Education, and Welfare. This has come about because the individual States, as a general rule, have been unwilling to discharge their own responsibilities in this field. Because the general nature of FDA's work is irritating to private and commercial interests, and because it lacks public appeal, it has been for many years one of the most notoriously underfinanced of all the Federal agencies. To the extent that it has an enormous job to do, and too few people to do the job properly, it is a "bureaucracy" in one sense of the word.

But as Time should know, the real distinguishing features of a bureaucrat are timidity, lethargy, and a sort of contempt for the intelligence of the public. None of these qualities were evident in Secretary Flemming's handling of the cranberry episode, but rather the opposite of them. He must have known clearly beforehand just what a hue and cry would be raised, and just what sort of articles would be written in national magazines such as your own, but nevertheless he went ahead. You should honor him for his courage and his integrity, because he could have sidestepped the issue and few people would have known or cared.

The whole controversy over chemicals in foods can be boiled down to a single, simple opposition of interests. Industry, business, manufacturers, are interested in adding chemicals to foods because this results in commercial advantages of one type or another. The consumer is interested in having as few chemicals as possible in foods, because he is chary of eating slow-acting poisons. This is not a black-or-white business, but one with many fine shades of gray, and the equilibrium must shift from time to time in accord with public opinion. Public opinion should be based on honest information. If the editors of Time cannot find it in their hearts to view such incidents as the cranberry episode from the public point of view, at least they might remember the professional ethics of the news reporter and keep their personal biases to themselves.

Sincerely yours,

GEOFFREY MARTIN, M.D., *Executive Secretary.*

THE KANSAS STATE BOARD OF HEALTH,
Topeka, Kans., December 3, 1959.

EDITOR, *The New Republic,*
Washington, D.C.

DEAR SIR: The editorial, "Those Cranberries," in the November 30 issue was a considerable surprise. First, because of its high content of uncritical assumptions. Second, because in tone it was much more appropriate to the house organ of the National Association of Manufacturers than to the pages of the New Republic, a periodical traditionally ranged on the side of the individual.

The thesis of the editorial is that the cranberry episode is a calculated attempt to warn the food industry that it must persuade Congress to remove from basic food and drug law the prohibition on cancer-producing substances (as contained in the Delaney amendment). This may or may not be so—I do not think it is so—but in any case here is a direct quotation from information furnished to State health departments with Secretary Flemming's original release on cranberries. Mr. Flemming is speaking, directly to the principle of the Delaney amendment:

"The application of this principle is necessary in our opinion because while in theory there may be a minute quantity of a carcinogen which is safe in foods, in actuality our scientists do not know whether this is true or how to establish a safe tolerance.

"Therefore, we would oppose any attempt to take the cancer clause out of the food additives amendment, and we will support the inclusion of such a clause in the color bill which is now before the Congress."

Until such time as it should be proved that Mr. Flemming is a most devious and perfidious individual, the above should, in my opinion, be taken as an honest statement of the position of the Department.

May I, from the body of your editorial, take three statements which I believe to be either untrue or highly misleading?

(1) "Recent additions to the basic food and drug laws are unworkable." This sentence presumably refers to the Delaney amendment. Who says it is unworkable, and why on earth should the New Republic take the statement for revealed truth? The amendment is a reasonable attempt to keep carcinogens out of food. There is no reason of which I know that standard tests and processes may not be set up for all new chemicals, that chemicals showing any trace of cancer-producing properties may not be rigidly excluded from food, and that approved chemicals which eventually prove to be carcinogens may not be removed from circulation. The enforcement of the law is moderately expensive, and of course it cannot be enforced with very great precision, but it still appears to be a worthwhile addition to services that protect consumers.

To say that the law is unworkable is to say in effect that the public might as well throw up its hands and agree to henceforth eat whatever the food industry puts before it. Experience has shown (from the days of embalmed beef right down to the present) that this is a risky proposition—and an increasingly risky proposition in the future in view of the accelerating technology of the food industry.

(2) "The cranberry people have pointed out that it is impossible for a man to eat enough aminotriazole—even over a lifetime—to suffer a rat's fate."

In the food and drug control business, one learns to be wary of all statements proceeding directly from a commercial interest, as they are likely to be tinged with bias. (The tobacco people still maintain that cigarettes do not lead to cancer.) In medicine, one also learns to be wary of using the word "impossible" about anything connected with the reactions of a large population of human beings.

Tests for carcinogenicity of aminotriazole have been carried out on a small number of laboratory animals, and the only thing that we know with certainty is that it produced cancer of the thyroid in some of them. We do not know whether or not human beings are less susceptible, twice as susceptible or fifty times as susceptible as rats. We do not know that certain people are not exquisitely sensitive to the effect of the chemical. We do not know whether the effect of aminotriazole is not magnified by other substances in the ordinary diet of humans but not of rats and mice. We do not know that young children as a group are not much more susceptible than mature humans. And finally and most particularly, we do not know the mechanism of the production of cancer, by aminotriazole or anything else.

The thyroids of our youngest children, for example, have already been insulted by a considerable intake of radioactive iodine during the past several years, because they are great milk drinkers and milk has been contaminated by fallout. Is it impossible that the insult of minute amounts of aminotriazole, added to the insult of radioactive iodine, and added perhaps to other insults we don't know about yet, will result in a number of cases in cancer of the thyroid 25 years from now?

In the face of our abysmal ignorance, only a knave or a fool could use the word "impossible." Scientifically speaking, the situation with aminotriazole is something like this. The manufacturers, in the midfifties, carried out feeding tests on a small number of laboratory animals over a short period of time. All went well, and the compound was released for use and approved by the Department of Agriculture in 1956. The manufacturer's tests were then in effect greatly expanded: the population of the United States became his test animals, and the duration of the test was increased indefinitely. Any reputable scientist, on the cranberry payroll or any other, will tell you that when you increase your test series from a few hundred animals to a few hundred million, and from a few years to decades, you are likely to come up with some new and interesting data. It is fortunate that in this case the carcinogenic properties of the chemical were first recognized in laboratory animals—in 1959.

(3) "FDA may soon be forced to create pandemonium in the food industry by outlawing perhaps hundreds of additives, although scientists believe them safe in the quantities now used."

Who are the scientists? You are the New Republic and not Godey's Lady's Book, and you should know that there are scientists and scientists, and that some of them have strong commercial biases, and that there are often major differences of opinion among equally well-qualified persons. Are there scientists who do not believe that it is safe for the public to eat minute quantities of hundreds of carcinogens? If scientific opinion were unanimous, but it consisted only of "belief" and not of "certainty," would that belief be an adequate justification of the use of carcinogens?

Justification is perhaps the essence of the whole business. Life is full of risks, and human beings accept them in return for gains that may be realized. The real question in the cranberry episode is: Does the consumer realize any gains from the use of this particular weedkiller that outweigh the (apparently small) hazards to his health? If this question is answered in the affirmative, it is then necessary to ask: Does the consumer realize such cumulative gains from the use of hundreds or thousands of potential carcinogens in his diet as to outweigh the cumulative hazard to his health that they involve? If one's answer to this question is in the affirmative, then one can afford to be complacent about the eventual fate of the Delaney amendment.

If the Delaney amendment should go, the floodgates will be opened. If there is one thing certain in this business, it is that the food industry will ever more rapidly proliferate its use of new complex synthetic chemicals—insecticides, rodenticides, weedicides, antibiotics, fungicides, softeners, humectants, antioxidants, etc.—and that these chemicals will leave residues in food. The eventual effect of this compulsory dosage will probably not be felt by magazine editors comfortably past middle age, but it will bear on their children and grandchildren.

I should think, in view of the past history of the New Republic, that one might expect it to champion the cause of the consumer, to work for the rigid control of all chemical additives, and to fight for the Delaney amendment until the death. While an absolute ban on carcinogens might seem impractical at this time, you will surely be aware that the New Republic has supported many impractical causes in its time, and that today they no longer seem impractical but rather an accepted part of our social structure.

Sincerely yours,

GEOFFREY MARTIN, M.D., *Executive Secretary.*

The CHAIRMAN. Are there any questions by any member of the committee? Mr. Younger.

Mr. YOUNGER. Mr. King, what do you mean by a nonpartisan commission?

Mr. KING. The Commission which I structure in my bill is to be composed of nine of the top experts in biochemistry, nutrition, and

toxicology, three of them to be appointed by the President, three to be appointed by the majority and minority leader of the Senate, and three by the Speaker and minority leader of the House acting jointly. Thus, a complete nonpartisanship is to be preserved.

Mr. YOUNGER. You consider that their appointees would be nonpartisan coming from partisans?

Mr. KING. I consider that the one offbalances the other, and if they get into the spirit of the bill, I think it can be done. It has been done, and I think it can be done.

Mr. YOUNGER. That is like one rabbit balancing a horse, is it not, because you have got the majority leader of the Senate appointing some and the majority leader of the House, both of one party, and the President of a different party.

Mr. KING. The idea would be that no one would be appointed who was not acceptable to both. It would not be a question of one appointing one and the other appointing two. It would be a question of both of them appointing all three.

Mr. YOUNGER. What disturbs me about this is so many Members of Congress consider that when you appoint some commission or some committee in addition to what we already have the problem is solved. Do you think these men would do any better job than the chemists and the specialists that we have in the department of pure food and drug?

Mr. KING. Yes, I do, sir. I feel that there has been so much pressure, so much partisanship, and so much headline seeking in this whole problem, that the whole approach has become warped. There are many special areas.

Take, for example, fluoridation, an issue on which I myself have refused to take any stand, but about which so much has been said of an extremely partisan nature. Very little light has come forth which, to me, is sufficiently impartial, detached, and nonpartisan that it can be used as a fair yardstick by the many, many communities throughout the Nation which are looking for an impartial yardstick to which they can go to measure the values of these proposals, and I feel such a commission, operating in an entirely different atmosphere from that which obtains in such committees as this, could accomplish much.

Mr. YOUNGER. I think you have a different conception of nonpartisanship than is generally the accepted idea. The nonpartisanship we usually think of is being either Republican or Democratic, but you considered it nonpartisan if you have no particular conclusion on the subject, for instance, on fluoridation of water. You could be nonpartisan on water but I do not think the fluoridation of water is a nonpartisan subject according to your conception.

Mr. KING. Yes, Mr. Younger, I appreciate your bringing out the point.

In my bill, that matter is spelled out with particularly. Perhaps the use of the word "nonpartisan" is deceiving in this context.

Mr. YOUNGER. That is what I am afraid of.

Mr. KING. But the bill itself very clearly points out that what is meant is a scientist who has not identified himself vigorously with any particular point of view, nutritional point of view, or point of view on these controversial matters. I had in mind fluoridation particularly, but that is just one of many controversial matters. You would not want someone serving on this commission who had already written

articles either pro or con on the fluoridation issue or on the food additives issue.

Mr. YOUNGER. You are not necessarily looking for an uninformed man on the subject, but one who has not taken a position?

Mr. KING. That is correct. No, I do not want ignorant men; I want the top men in the Nation; and I am convinced that there are top experts who still have not taken a partisan position on these controversial issues.

Mr. YOUNGER. That is all, Mr. Chairman.

The CHAIRMAN. Thank you.

Mr. KING. I appreciate your questions on that as having given me a chance to explain it.

The CHAIRMAN. Mr. Roberts.

Mr. ROBERTS. Mr. Chairman, I apologize to the gentleman from Utah for not being present at the time he made a statement. I would just like to congratulate him on the intense interest he has shown in this subject.

Mr. KING. Thank you.

Mr. ROBERTS. I have received a good many letters from my State from people who feel strongly about this matter, and many of them mentioning H.R. 9150, which is your bill. I do not at this time know what position I would take as to the staffing of the commission.

I think perhaps, as the gentleman from California brought out, that it is true, there are Members of Congress who oppose this commission, perhaps getting their idea from this administration because there is a commission which has been established on practically every subject that comes up in the Congress. So maybe it has affected some of us here; I do not know.

At any rate, I do want to congratulate the gentleman for his statement and on his interests in this matter.

Mr. KING. Could I, perhaps, Mr. Chairman, just amplify for just a moment, in view of the fact that——

The CHAIRMAN. On this nonpartisan discussion. [Laughter.]

Mr. KING. Since the matter has been opened up, I would like to amplify just a bit. I have discussed this bill with both consumer interests and producer interests, and I have tried to reflect both points of view in drafting the bill, not exclusively one or the other.

I have talked with many farm groups, for example, and the point that they raise is that so many of these investigating commissions and congressional committees, one of which I myself am a member, although they serve their function, and much good is forthcoming—that they do have one weakness, that I think we all understand, and that is that everything that is done is done in the spotlight of publicity. Of necessity, that which comes out often becomes emotional and with one eye on publicity value. A strictly scientific investigation conducted in that type of atmosphere is really not conducive to getting right to the heart of an extremely complex problem.

So the feeling of these farm groups with whom I have had discussions on this matter is that if we could get away from that type of an atmosphere, and make this thing strictly scientific, maybe we could make a little more progress in some of these areas.

It is that that I had in mind, among other things, in drafting this legislation.

The CHAIRMAN. Mr. King, as I have observed in your proposal, H.R. 9150, it appears to me that it is directed toward the problem of fluoridation and not to this particular problem of color additives?

Mr. KING. The bill is——

The CHAIRMAN. It may be that you have or intend for it to have a broader coverages. Of course, in my humble judgment, when you try to cover fluoridation, it is a pretty broad subject in itself.

Mr. KING. Indeed it is.

The CHAIRMAN. And I have observed, also, it is not partisan at all, because I think you will find even in areas including my own where they are primarily of the same party, they go at it rather controversially.

Mr. KING. That is correct.

The CHAIRMAN. I am not too sure that I myself am willing to get into that controversy as yet.

Mr. KING. I am certain, Mr. Chairman, that I am not in a position to commit myself on that issue. I have felt strongly that the establishment of such a commission would be a very intellingent approach to a problem that up to now has been very thorny and very, very difficult to solve.

The CHAIRMAN. If it is like some places down in my area, I imagine it would be pretty difficult to get people to serve on that commission regardless of whether it is partisan or nonpartisan.

Mr. KING. Well, I think some are available. And just answering your first comment, Mr. Chairman, the bill is definitely broad enough to cover all aspects of the food problem. The fluorination issue being, of course, one of the most pressing and controversial, but definitely the color additives problem was contemplated also when the bill was drawn.

Actually, the commission, it is contemplated that the commission would come forth with an overall food policy, certain basic ground rules, shall I say, or guidelines that Congress could use in formulating future legislation.

The CHAIRMAN. Let me also compliment you on your presentation and your interest in this subject, and thank you for your appearance here.

Mr. KING. Thank you, Mr. Chairman.

Mr. John K. Worley, general counsel for the Pharmaceutical Manufacturers Association.

STATEMENT OF JOHN K. WORLEY, GENERAL COUNSEL, PHARMACEUTICAL MANUFACTURERS ASSOCIATION; ACCOMPANIED BY EDWARD BROWN WILLIAMS, AND DR. THOMAS CARNEY, VICE PRESIDENT, ELI LILLY & CO.

Mr. WORLEY. We thank you, Mr. Chairman, for this opportunity to present our case. Allied with me is Mr. Edward Brown Williams of the District Bar, and also Dr. Thomas Carney, vice president of the Eli Lilly & Co., one of our member firms.

I have filed a statement on behalf of the association, copies of which you have. I am not going to read it in its entirety because of the more important testimony to follow.

With your indulgence, I would like to emphasize certain portions of it.

Our statement, as you see, is directed at both the Senate and House bills.

The Pharmaceutical Manufacturers Association is a nonprofit membership association, incorporated under the laws of Delaware, with its principal office in the city of Washington, D.C. This association is the successor to the American Drug Manufacturers Association and the American Pharmaceutical Manufacturers Association, which became inactive in 1958. At the present time, there are about 140 member companies which are engaged in the manufacture of ethical pharmaceutical and prescription drug products.

The Senate bill, S. 2197, having passed the Senate in the 1st session of the 86th Congress and having been referred to your committee, I assume, will be given prior consideration. Therefore, on behalf of the Pharmaceutical Manufacturers Association, I respectfully request your earnest consideration of the following suggested amendments and changes in the Senate bill, which are sincerely offered in the interests of clarity, better enforcement, and elimination of some of the difficulties which have been encountered in the administration of the so-called food additives amendment passed by the 85th Congress, and now forming a part of the Food, Drug, and Cosmetic Act, as amended, and which is administered by the Food and Drug Administration of the Department of Health, Education, and Welfare.

And I appreciate that much of both color bills are fashioned after the food additives amendment.

We have given—we have spelled out definitively the eight changes and our reasons, and if these are acceptable to your committee in substance, and not necessarily in form, we can endorse 2197 of the Senate on behalf of the association.

Senate 2197 does not contain the clause found in proposed section 706(b)(5)(B) on page 10 of H.R. 7624, which is frequently referred to as the Delaney clause. The Senate deliberately omitted a cancer clause in passing S. 2197 and thus in our opinion avoided an unnecessary and too rigid standard and at the same time the public health was adequately protected.

We are certain, however, that this clause will be given earnest consideration by your committee. If it is your decision that this type of clause should be in such legislation, then we submit that this clause as set forth in H.R. 7624 may properly be amended to read as follows:

I think you will appreciate, when I give the linear change, that we have not made a substantial change.

Page 10 of H.R. 7624, line 14, we suggest, after the word "animal," there be added:

in an amount and under conditions reasonably related to the intended use.

The CHAIRMAN. Wait a minute. You lost me now. What page are you reading from?

Mr. WORLEY. From 10 of H.R. 7624.

The CHAIRMAN. You are not reading from your statement then?

Mr. WORLEY. No, sir; I am not.

Mr. DINGELL. Mr. Chairman, do you think it would be appropriate that the witness would read from his statement so we could follow what he is talking about and ask intelligent questions later?

Mr. WORLEY. I will read exactly as I have it here:

(B) a color additive—

this is the Delaney clause, we feel——

Mr. DINGELL. Would it be possible for the witness to read from his statement so that we can follow the statement and make notes and ask intelligent questions?

The CHAIRMAN. Well, the witness is about to read from the statement. If you will turn to page 5 of the statement.

Mr. DINGELL. He has been jumping around like a grasshopper so far, Mr. Chairman.

Mr. WORLEY (reading):

(B) a color additive (i) shall be deemed unsafe, and shall not be listed for any use which will or may result in ingestion of all or part of such additive, if the additive is found to induce cancer when ingested by man or animal in an amount and under conditions reasonably related to the intended use, or if it is found, after tests which are appropriate for the evaluation of the safety of the additive for its intended use, to induce cancer in man or animal, and (ii) shall be deemed unsafe, and shall not be listed, for any use which will not result in ingestion of any part of such additive if, after tests which are appropriate for the evaluation of the safety of additives for such use, or after other relevant exposure of man or animal to such additives, it is found to induce cancer in man or animal.

I simply thought if I showed the word changes, Mr. Dingell, it might be a little easier to follow. That is what I had in mind.

The CHAIRMAN. Part of the confusion is due to the fact he——

Mr. DINGELL. Part of the confusion——

The CHAIRMAN. Just a minute, please. Part of the confusion is due to the fact we do not have copies of the bill. Mr. Clerk, will you see each member has a copy of the bill?

Mr. WORLEY. I am sorry.

The CHAIRMAN. So we can follow the explanation of the witness.

Mr. WORLEY. Color additives, and particularly certain coal tar colors, have been chosen for use in pharmaceutical products for identity and safety purposes. They are essential to product identification and diversification. They are an integral part of the pharmaceutical manufacturer's product and package design. They serve a vital functional purpose as an aid to dosage instructions and directions for use, particularly where multiple medication is required. They contribute as well a desirable appearance to pharmaceutical preparations, which is an important element in consumer acceptance. This factor is of especial importance where medication for children is concerned.

At this point, if I may, Mr. Chairman, I would like to introduce into the record a survey made by one of our member companies, Smith Kline & French, a survey which was made of boards of pharmacy, pharmacy school deans, retailers, State associations, hospitals, and doctors—their reaction to the importance of color and safety.

I also would like to file with the committee a display of the Department of Professional & Vocational Standards of the State of Board of Pharmacy, State of California, on safety of drugs.

Member firms who are the largest users of these colors report to us that they have manufactured and distributed millions of pills, tablets, and capsules and thousands of gallons of pharmaceutical products for upward of 10 to 15 years without any complaints attributable to the

use of such colors in said products. Furthermore, the FDA has been quoted as stating that:

> We have not received any reports of injury to users of lipstick, drugs, or foods made with the coal tar colors we propose to delist. The amounts of these colors that get into the digestive system are smaller than those used in our tests.

The listing procedure, I think the committee knows, was brought about by the Supreme Court case of something over a year ago establishing what is known as the harmful per se doctrine.

This is borne out by the fact that the 2 percent and 5 percent of total diet tests given to rats in respect of some of these colors, in order to determine whether or not they are carcinogens or otherwise harmful, when translated into terms of use by man, would mean that a man would have to take 420 grams per day of such colors. Actually, the amount of color used in average daily doses of pharmaceutical products is only a minute fractional part of this, and is less than one ten-thousandth (0.0001) of a gram.

No one is more conscious of their responsibility to the public than pharmaceutical manufacturers (not excepting all of the drug enforcement officials and legislators in the country). We do not propose that any ingredients, including color additives, should be permitted for use in pharmaceutical products that would be harmful in amounts and under conditions reasonably related to their intended use.

Therefore, we submit that their rejection should be based upon sound and reasonably scientific evidence which is related to the intended use of such additives in man and not upon unrealistic and arbitrary tests in animals.

With the chairman's permission, I would like to offer Mr. Williams and then Dr. Carney, whose testimony, I believe, is the type which has never been entered before in any of these hearings on color or food bills, and I think is very important to hear.

The CHAIRMAN. I think, first, Mr. Worley, there may be some questions some of the members may have regarding your statement, or did you want to finish your entire presentation?

Mr. WORLEY. If you please, it will be rather extensive and I would like to have, if it is all right with the committee, I would like to get the rest of the testimony presented and then we will all answer questions, because I daresay most of the questions will be highly technical which will have to be answered, most of which will have to be answered by Dr. Carney.

I am not a technical man.

The CHAIRMAN. Before we get to the technical phase, we might stay with the legal technicalities for just a few minutes.

Mr. WORLEY. At your pleasure, sir.

The CHAIRMAN. Mr. Mack.

Mr. MACK. I have no questions.

The CHAIRMAN. Mr. Younger, do you have any questions at this time?

Mr. YOUNGER. No.

The CHAIRMAN. Mr. Roberts, do you have any questions at this time?

Mr. ROBERTS. Mr. Chairman, just one or two.

Mr. Worley, I have no doubt of the sincerity of the pharmaceutical people about the matter. The question in my mind with reference to

the amendment that you propose at the top of page 5 in your testimony——

Mr. WORLEY. Yes, sir. This is the amendment to the Delaney clause.

Mr. ROBERTS. Yes, sir.

Mr. WORLEY. Yes, sir. So-called Delaney clause. Yes, sir.

Mr. ROBERTS. You say in there—and I am reading from line 3:

* * * if the additive is found to induce cancer when ingested by man or animal in an amount and under conditions reasonably related to the intended use, or if it is found, after tests——

Mr. WORLEY. Appropriate.

Mr. ROBERTS (continuing).

Which are appropriate for the evaluation of the safety of the additive for its intended use, to induce cancer in man or animal * * *.

Now, stop right there. I am wondering if you disagree with the statement of Secretary Flemming, who was quoting Dr. Mider of the Cancer Institute, that we actually do not know how much of these carcinogenic materials it takes to start the multiplication of cells that cause cancer.

Mr. WORLEY. We are getting into the technical aspects of it. Dr. Carney will show, I am sure, Mr. Roberts, there is sufficient technical evidence to warrant the use of colors, and we are only talking about drugs, the amount of which will only be one ten-thousandth of a gram in a man in the average dose.

Now, these are very infinitesmal amounts, and I think Dr. Carney has an answer for that, Mr. Roberts.

That is our whole point: that these——

Mr. ROBERTS. I will wait. If you would rather I would direct that question to him.

Mr. WORLEY. It is highly technical, if you please.

Mr. ROBERTS. Now, we will go on to the third paragraph on page 5 where you say that:

Member firms, who are the largest users of these colors, report to us that they have manufactured and distributed millions of pills, tablets, and capsules and thousands of gallons of pharmaceutical products for upwards of 10 to 15 years without any complaints attributable to the use of such colors in said products.

Mr. WORLEY. That is the information submitted to us, Mr. Roberts.

Mr. ROBERTS. Sir?

Mr. WORLEY. That is the information submitted to us, the association.

Mr. ROBERTS. Well, do you think that the reason you have not received those complaints in the past is the fact that some of this knowledge is new? We are just now finding that some of these things that we thought were relatively harmless, are now considered harmful.

Mr. WORLEY. Well, the aminotriazole, I know the cranberry situation from that standpoint, aminotriazole is a relatively new pesticide. Our colors have been used for a good many years, I said 10 to 15 years was to take a point. I am sure some of those have been used much longer. Dr. Carney is familiar with that area.

Mr. ROBERTS. I know, but just as a matter of policy in trying to think this thing out, would you not say that if the information that these coal tar dyes and other colors have been demonstrated recently

to have caused cancer, that certainly it would not necessarily mean too much that you have not received complaints within the last 2 or 3 years?

Mr. WORLEY. I refer also to the next paragraph. When you use a 2- to 5-percent diet in rats, I am told by the technical people that you can produce cancer with common salt or sugar. It is almost limitless what you can make a carcinogenic substance of.

Mr. ROBERTS. I agree.

Mr. WORLEY. Now, test in rats is 420 grams a day, as I have said here, and that has been given to me, I did not make the tests, obviously, and I did not put this together except on information supplied by our technical people.

Four hundred and twenty grams a day is not what the average person takes with an average dose of a pharmaceutical product; it is one ten-thousandth of a gram.

Well, we feel this way affirmatively, if there were any carcinogenic possibilities, we certainly would not use them because of our feeling of responsibility, moral as well as legal, and I think this will be developed a little further and certainly much more soundly, Mr. Roberts, from the technical standpoint.

Mr. ROBERTS. Those are all the questions I have, Mr. Chairman, at this time until Dr. Carney testifies.

The CHAIRMAN. Mr. Glenn.

Mr. GLENN. I have some questions.

Sir, in your first paragraph of your statement you speak of the manufacture of ethical drug products by your association.

Mr. WORLEY. Yes, sir.

Mr. GLENN. Can you tell us what unethical products mean?

Mr. WORLEY. Well, that is a fair question. It is an archaic term and we have not changed it. I think the best way to describe it is that an ethical product or an ethical manufacturer, a manufacturer of ethical products is one that does not advertise to the public, as contrasted with the proprietary. We do not advertise to the public, but only advertise to the doctor. That is the use of the word "ethical" at that point.

Mr. GLENN. Well, you will apply it——

Mr WORLEY. It is not used in its normal connotation here. Pardon?

Mr. GLENN. You are not applying the usual legal definition of ethical and unethical?

Mr. WORLEY. No, sir; this is a term. I have been affiliated with the industry a good many years, and I guess it goes back 40 or 50 years.

Mr. GLENN. That is all.

Mr. WORLEY. To distinguish themselves from the proprietary people who also have an equity here with respect to color.

Mr. GLENN. That is all.

The CHAIRMAN. Mr. Rhodes. Mr. O'Brien.

Mr. O'BRIEN. No questions, Mr. Chairman.

The CHAIRMAN. Mr. Moss.

Mr. MOSS. No.

The CHAIRMAN. Mr. Dingell.

Mr. DINGELL. Thank you, Mr. Chairman.

You had a whole series of amendments here that you proposed.

Mr. WORLEY. Eight, to be exact, sir.

Mr. DINGELL. I wanted to go into them. You completely ignored them in your statement.

Mr. WORLEY. I had no intention to. I am only trying to give the important part or the most important part emphasis.

Mr. DINGELL. Then you regard these other amendments as being unimportant?

Mr. WORLEY. I do not. I said these are very important. I will stay with you as long as you wish.

Mr. DINGELL. You bottom the statement that you make here on the fact that very minute amounts are ingested when used as coloring matter in drugs; am I correct?

Mr. WORLEY. That is right.

Mr. DINGELL. That is the basis for your whole statement? And we would assume that you were speaking now on behalf of the pharmaceutical manufacturers?

Mr. WORLEY. That is all.

Mr. DINGELL. But as I read your amendment, it is so broad that it goes to any coloring substance which can be used in any food or cosmetic or substance which would come under the regulations of the Food and Drug Administration. Does it not appear that if the committee were to adopt this amendment of yours, that the loophole that you create in the law would be unnecessarily wide in view of your own testimony and the interests of your own organization?

Mr. WORLEY. We have no intention of creating a loophole, Mr. Dingell. I think the clauses to which you refer are the broad clauses which cover food, drugs, and cosmetics, and we must of necessity leave it open.

Mr. DINGELL. Well, I just refer you to the language of your own amendment on the top of page 5 of your own statement which states that, and I ask you if it does not cover, let us say, every substance in addition to just coloring matter to be used in drugs?

Mr. WORLEY. The so-called Delaney clause?

Mr. DINGELL. Yes.

Mr. WORLEY. Well, not insofar as——

Mr. DINGELL. Is your statement not so broad that it actually covers everything and not just coloring substances used in drugs? It would include coloring substances used in maraschino cherries, for example?

Mr. WORLEY. No; if you please, you must take and that is what I thought I would be clear to turn to the bill itself to show the change we have made, the limiting words are "in an amount and under conditions," that is foods, drugs, or cosmetics, "reasonably related to the ingredient used."

Now, maraschino cherries and a capsule or pill are entirely different, and I think we have not left the door wide open for maraschino cherries at all.

Mr. DINGELL. But as a matter of fact, this amendment deals with everything. It does not just deal with the microscopic.

Mr. WORLEY. That is true.

Mr. DINGELL. You would get, let us say, in a capsule as opposed to catsup or canned peaches or something like that?

Mr. WORLEY. Quite right.

Mr. DINGELL. So the amendment is actually a good deal broader than your organization and the individual pharmaceutical manufac-

turers would need for their own protection; that is the point that I am getting to.

Mr. WORLEY. I would think so. I thought—forgive me, I did not mean to interrupt you. I felt we would stay with the Delaney clause, because I sense, and it is very easy to sense, there is considerable support for the clause legislatively. We wanted to stay with it, and I think, again, to be repetitive, the limiting words for you in catsup, in your catsup, your maraschino cherries, or anything else, are in an amount and under conditions reasonably related to the intended use.

That covers them all, though; you are quite right.

Mr. DINGELL. It is a pretty big tent.

Now, the question I have that I want to ask you next is this, and it goes along the lines of some of the questions that were asked by Mr. Roberts. I am particularly interested in the—and I would refer you to the statement of the Secretary of Health, Education, and Welfare, and I am roughly paraphrasing when I say he said that we do not know at what level of use a substance becomes carcinogenic. We do not know, as a matter of scientific fact, the, let us say, the relationship of animal tests to human tests as showing the substance might be carcinogenic.

Do you disagree with any one of those statements?

Mr. WORLEY. I—supported by my technical people, yes, and you will get a direct answer from my technical people, who are next to testify, Mr. Carney.

Mr. DINGELL. Who is he?

Mr. WORLEY. He is vice president in charge of research and development and control of Eli Lilly & Co., one of the largest firms in the country.

Mr. DINGELL. Is he a cancer specialist?

Mr. WORLEY. No; he is not.

Mr. DINGELL. He is not?

Mr. WORLEY. But he has made a study of carcinogenisty.

Mr. DINGELL. But he is not a cancer specialist?

Mr. WORLEY. I do not know what a cancer specialist is. He is not a surgeon.

Mr. DINGELL. I will take your definition.

Mr. WORLEY. He is not an M.D.

Mr. DINGELL. He is a doctor of what?

Mr. WORLEY. Ph. D. in chemistry, in one branch of chemistry, and I assume he will tell you that.

Mr. DINGELL. The real difference between the language of your amendment or your proposed amendment to the bill and the language of the Delaney clause, the Delaney cancer clause, as it appears in the bill, is this very point that we have been working on. Your assumption is that we do know at what levels these substances will produce cancer; am I correct?

Mr. WORLEY. I believe so.

Mr. DINGELL. Whereas, the assumption on which the Delaney clause as drafted and as included in the food additives bill, and also as included in the color additives bill, is that we do not know at what level these substances create cancer; am I correct?

Mr. WORLEY. I do not think we know levels completely. But when you consider conditions reasonably related to the intended use, I

understand there is adequate scientific knowledge as to whether it could be used safely or not.

Now, whether that is level or not, I do not know technically, Mr. Dingell.

Mr. DINGELL. But the real difference in philosophy between the one and the other is the assumption which you state today and which I am not challenging, for argument's sake only at this time, that we can establish levels at which a substance will not create cancer?

Mr. WORLEY. We are working on such things all the time, and they are being developed all the time.

Mr. DINGELL. Well, but this is the basic difference. It is your thesis that we can establish the level at which these substances create a cancerous condition in the human body?

Mr. WORLEY. Well, or to put it——

Mr. DINGELL. By existing knowledge in the scientific field. This is your assumption, and it is upon that assumption that your amendment is drafted, that we can fix safe levels for cancer producing substances. That is the whole burden of your testimony and philosophy with regard to the amendment which you suggest on page 5 of your statement; am I correct?

Mr. WORLEY. Well, I do not want to bandy words. I do not know levels. I know that we feel that under conditions of use related to our intended use, we feel that certain colors can be used safely in the quantities that go into pills, tablets, and whatnot.

Mr. DINGELL. Without creating cancer?

Mr. WORLEY. That is right.

Mr. DINGELL. Even though at certain other levels of use they might be cancer producing?

Mr. WORLEY. That is right. Dr. Carney will be able to answer that much more definitely.

Mr. DINGELL. That is what I am getting at. This was your statement and I wanted to get at what your feeling was.

Mr. WORLEY. That is right.

Mr. DINGELL. No further questions, Mr. Chairman. Thank you.

Mr. MACK (presiding). Mr. Kilgore.

Mr. KILGORE. I have no questions.

Mr. MACK. Mr. Rogers.

Mr. ROGERS of Florida. Just a question or two.

Of course, I presume that an amendment similar to the Delaney amendment as it affects cancer could be injected as for heart disease as well, and it might be difficult there to say how much fat a person should consume.

Mr. WORLEY. Yes.

Mr. ROGERS of Florida. And maybe we ought to be as much concerned about heart disease as we should about cancer. I do not know if the scientific knowledge is such but that should be so, too. Maybe butter has an effect, I do not know, but as I understand from your testimony, you feel that there can be shown scientifically certain levels whereby safety can be established?

Mr. WORLEY. Technical people feel that way, yes, Mr. Rogers.

Mr. ROGERS of Florida. Thank you very much. Thank you, Mr. Chairman.

(The statement submitted by Mr. Worley follows:)

PHARMACEUTICAL MANUFACTURERS ASSOCIATION,
Washington, D.C., February 8, 1960.

Re S. 2197 and H.R. 7624.

Hon. OREN HARRIS,
Chairman, Interstate and Foreign Commerce Committee,
House of Representatives, Washington, D.C.

MY DEAR MR. CHAIRMAN: The Pharmaceutical Manufacturers Association is a nonprofit membership association, incorporated under the laws of Delaware, with its principal office in the city of Washington, D.C. This association is the successor to the American Drug Manufacturers Association and the American Pharmaceutical Manufacturers' Association which became inactive in 1958. At the present time there are about 140 member companies which are engaged in the manufacture of ethical pharmaceutical and prescription drug products.

The Senate bill (S. 2197), having passed the Senate in the 1st session of the 86th Congress and having been referred to your committee, I assume, will be given prior consideration. Therefore, on behalf of the Pharmaceutical Manufacturers Association, I respectfully request your earnest consideration of the following suggested amendments and changes in the Senate bill, which are sincerely offered in the interests of clarity, better enforcement, and elimination of some of the difficulties which have been encountered in the administration of the so-called food additives amendment passed by the 85th Congress, and now forming a part of the Food, Drug, and Cosmetic Act as amended, and which is administered by the Food and Drug Administration of the Department of Health, Education, and Welfare, viz:

I

1. Proposed section 201(t)(1)(B), on page 3, should be amended so as to read as follows: "is added or applied to a food, drug, or cosmetic, or to the human body or any part thereof, primarily for the purpose of imparting color thereto".

The reason for suggesting this amendment is that the provision in the proposed bills is too rigid. It would require the Secretary, by regulation, to make a determination that a substance is used solely for a purpose other than coloring. There are few substances used in the manufacture of drugs which are completely without color. They are, therefore, "capable" of imparting color to the finished product, and with respect to each of them, the Secretary would have to make a determination that their use is solely for a noncoloring purpose. To obtain such a determination for hundreds of substances would impose an undue burden upon industry and upon the Food and Drug Administration. In each substance, the determination of the Secretary would be subject to the hearing procedure of the law and might conceivably be the subject of subsequent judicial proceedings. The amended provision permits deletion of the last clause, which would only mean complicated regulatory work. For example, the addition of orange juice, lime juice, or any fruit juice to a food, producing incidentally some color in the food would require such a regulation. It is not believed that the intent of S. 2197 covers such cases.

2. Proposed section 201(t)(1), on page 3, should be amended by the addition thereto of a new subparagraph (C) as follows:

"(C) and except that such term does not include any material which is generally recognized, among experts qualified by scientific training and experience to evaluate its safety, as having been adequately shown through scientific procedures, or experience based on common use, to be safe under the conditions of its intended use when added or applied to a food, drug, or cosmetic or to the human body or any part thereof."

3. Proposed section 706(b)(7) on page 11, should be deleted. The proposed section takes language from the food additive law, which has no place in a color additive law. Choice and intensity of color are such obvious things that there is no point in a complicated utility requirement, nor is there any purpose in a "finding" on the amount of color needed to produce the intended effect. It is not believed to be within the province of the Secretary to establish the degree of physical or other technical effect to be accomplished by the proposed use of a color additive.

4. Proposed section 706(b)(8), on pages 11 and 12, should be amended so as to read as follows:

"(8) If, having regard to the aggregate quantity of color additive likely to be consumed in the diet or to be applied to the human body, the Secretary

finds that the data before him fail to show that it would be safe and otherwise permissible to list a color additive (or pharmacologically related color additives) for all the uses proposed therefore and at the levels of concentration proposed, the Secretary shall, in determining for which use or uses such additive (or such related additives) shall be listed, or how the aggregate allowable safe tolerance for such additive or additives shall be allocated by him among the uses for which such additives have not already been listed, take into account, among other relevant factors (and subject to the paramount criterion of safety), (A) the relative aggregate amounts of such color additive which he estimates would be consumed in the diet or applied to the human body by reason of the various uses and levels of concentration proposed; and (B) the availability, if any, of other color additives safe for one or more of the uses proposed."

The words "or remain" should be deleted so that users of colors under tolerance limitations will not be in constant jeopardy of losing their tolerances to more persuasive users who apply later, after the aggregate allowable safe tolerance has been established.

Clause A should be deleted to eliminate marketing factors from consideration in the allocation of tolerances. Evaluation of such social questions is hardly appropriate to the purview of an administrative agency concerned with regulating the safe use of colors, and is certainly without precedent.

5. Proposed section 203(a)(1), on pages 15 and 16, should be amended as follows: In lines 2 and 3 on page 16 delete "(including a deemed provisional listing)."

This change is required by the deletion requested in item 8.

6. (*a*) Proposed section 203(a)(2) on page 16, should be amended by deleting in lines 13, and 14, on page 16 the following: "(or deemed provisional listing)"; and by deleting in lines 19 and 20: "(or deemed provisional listing)."

(*b*) Proposed section 203(d)(1)(E) on page 19 should be amended as follows: In line 20 on page 19 delete "(or deemed provisional listing)."

These changes are required by the deletion requested in item 8.

7. Proposed section 203(d)(2)(A) on page 19, should be deleted. This constitutes an unwarranted dilution of the protection afforded by Congress in the so-called Hale amendment to the Food, Drug, and Cosmetic Act which provides for adequate review of administrative rulings.

8. Proposed section 203(d)(3), on page 20, should be deleted. It is not believed consistent with the spirit of S. 2197 for the Secretary to have the authority, under capricious circumstances, to delist a color additive previously provisionally listed or deemed provisionally listed, upon the receipt of limited adverse information. The proposed section would put the provisional listing of colors under the arbitrary rule of the Secretary, without regard to accepted administrative procedure. Such authority is only rarely sought, except in times of emergency, such as wartime.

If these amendments are made we can and will endorse S. 2197 on behalf of the industry.

II

S. 2197 does not contain the clause found in proposed section 706(b)(5)(B) on page 10 of H.R. 7624 which is frequently referred to as the Delaney clause. The Senate deliberately omitted a cancer clause in passing S. 2197, and thus, in our opinion, avoided an unnecessary and too rigid standard and at the same time the public health was adequately protected.

The Senate Committee on Labor and Public Welfare stated with respect to the cancer clause in the bill which became the food additives amendment (S. Rept. No. 2422, 85th Cong., p. 11) namely:

"* * * we would point out that in our opinion it is the intent and purpose of this bill, even without the amendment, to assure our people that nothing shall be added to the foods they eat which can reasonably be expected to produce any type of illness in humans or animals. We applaud Congressman Delaney for having taken this, as he has every other opportunity, to focus our attention on the cancer-producing potentialities of various substances, but we want the record to show that in our opinion the bill is aimed at preventing the addition to the food our people eat of any substances the ingestion of which reasonable people would expect to produce not just cancer but any disease or disability."

At this point we should like to endorse the report of Mr. Arthur T. Schramm, chairman of the Certified Color Industry Committee, in respect of the cancer

clause. Mr. Schramm quite properly stated, among other things, "as this committee knows from the testimony of the panel of scientific experts who appeared before it during the hearings on the food additives legislation, safety is a relative and not an absolute concept, and it is a determination based upon many factors which shift in the ever-growing light of scientific knowledge. In this fluid and expanding field, it can be dangerous and unfortunate to impose rigid, flat legislative standards."

We are certain, however, that this clause will be given earnest consideration by your committee. If it is your decision that this type of clause should be in such legislation, then we submit that this clause (as set forth in H.R. 7624) may properly be amended so as to read as follows:

> "(B) a color additive (i) shall be deemed unsafe, and shall not be listed for any use which will or may result in ingestion of all or part of such additive, if the additive is found to induce cancer when ingested by man or animal in an amount and under conditions reasonably related to the intended use, or if it is found, after tests which are appropriate for the evaluation of the safety of the additive for its intended use, to induce cancer in man or animal, and (ii) shall be deemed unsafe, and shall not be listed, for any use which will not result in ingestion of any part of such additive if, after tests which are appropriate for the evaluation of the safety of additives for such use, or after other relevant exposure of man or animal to such additives, it is found to induce cancer in man or animal."

Color additives, and particularly certain coal tar colors, have been chosen for use in pharmaceutical products for identity and safety purposes. They are essential to product identification and diversification. They are an integral part of the pharmaceutical manufacturer's product and package design. They serve a vital functional purpose as an aid to dosage instructions and directions for use, particularly where multiple medication is required. They contribute as well a desirable appearance to pharmaceutical preparations, which is an important element in consumer acceptance. This factor is of especial importance where medication for children is concerned.

Member firms, who are the largest users of these colors, report to us that they have manufactured and distributed millions of pills, tablets, and capsules and thousands of gallons of pharmaceutical products for upwards of 10 to 15 years without any complaints attributable to the use of such colors in said products. Furthermore, the FDA has been quoted as stating that, "We have not received any reports of injury to users of lipstick, drugs, or foods made with the coal tar colors we propose to delist. The amounts of these colors that get into the digestive system are smaller than those used in our tests."

This is borne out by the fact that the 2 percent and 5 percent of total diet tests given to rats in respect of some of these colors, in order to determine whether or not they are carcinogens or otherwise harmful, when translated into terms of use by man, would mean that a man would have to take 420 grams per day of such colors. Actually, the amount of color used in average daily doses of pharmaceutical products is only a minute fractional part of this, and is less than 0.0001 gram.

No one is more conscious of their responsibility to the public than pharmaceutical manufacturers (not excepting all of the drug enforcement officials and legislators in the country). We do not propose that any ingredients, including color additives, should be permitted for use in pharmaceutical products that would be harmful in amounts and under conditions reasonably related to their intended use. Therefore, we submit that their rejection should be based upon sound and reasonably scientific evidence which is related to the intended use of such additives in man and not upon unrealistic and arbitrary tests in animals.

We desire to present further testimony to this committee in support of our position, with particular emphasis on the Delaney clause, through Edward Brown Williams of Harter, Calhoun & Williams, Washington attorneys, and Dr. Thomas Carney.

Respectfully yours,

JOHN K. WORLEY, *General Counsel.*

Mr. MACK. We have with us this morning—is Dr. Carney your next witness?

Mr. WORLEY. Yes; he is, Mr. Chairman.

Mr. MACK. We have Dr. Carney from Indiana, but first we will have a statement from the able Congressman from Indianapolis, Mr. Joseph W. Barr.

Congressman, I understand you have a very distinguished constituent with you and we would be very happy to have you introduce him.

Mr. BARR. Mr. Chairman and gentlemen, I do indeed have a most distinguished constituent of mine with me today, Dr. Thomas P. Carney, who is the vice president of research and development control of the Eli Lilly & Co. at Indianapolis. I would like to tell you just a little bit about Dr. Carney before he starts his testimony.

Dr. Carney is a graduate of Notre Dame, chemical engineering; had his Ph. D. at Penn State. He took his postdoctorate work at the University of Wisconsin.

Dr. Carney has been a past chairman of the Medical Division of the American Chemical Society. He has been a chairman of the agents committee advisory to chemical warfare; he is a former chairman and a present member of the industry subcommittee, the National Chemotherapy Service Center. Dr. Carney has been associated with Eli Lilly & Co. about 15 years.

I wanted to tell you just a little bit about the Eli Lilly & Co. I am not here on behalf of the drug industry, but I can tell you about one pharmaceutical manufacturer that is resident in my constituency. The Eli Lilly & Co. is an old, old company. It is a pioneer in research in the United States of America, one of the first industrial organizations in this country ever to seriously attempt research.

Dr. Carney, here, today, is in the long historical flow of research of that company. It actually started, their research efforts started, back in about 1900 under the direction of Dr. G. H. A. Clowes, who, incidentally, was one of the first men in the world, literally in the world, to attempt cancer research. He brought the first cancerous tissue from England in 1903 to this country. That tissue, incidentally, is still growing in the laboratories of the Eli Lilly & Co.

Men such as Mr. G. B. Walden, who helped pioneer insulin for pernicious anemia; men such as Dr. Horace Schonle, who worked in developing barbituric acid, men who work with Dr. Carney today and in whose footsteps he has followed; Dr. Carney, I can assure you, is not only a distinguished member of my constituency but a great American scientist in what I believe to be the best tradition.

I am delighted to present him to you gentlemen of this committee. Thank you.

STATEMENT OF DR. THOMAS CARNEY, VICE PRESIDENT, ELI LILLY & CO.

Dr. CARNEY. Thank you very much, Congressman.

Gentlemen and members of the committee, I want to express my gratitude to you and that of the pharmaceutical industry and of my State. I want to express our appreciation to you for allowing me to present our point of view today.

I appear before the committee as chairman of the Committee for the Study of Carcinogenic Substances of the Pharmaceutical Manufacturers Association to present a statement on behalf of the association.

This statement will be confined to a discussion of the implications of the so-called cancer clause, or Delaney amendment (sec. 706(b)(5)

(B)) of H.R. 7624 and the corresponding clause in the Food Additives Act of 1958.

As you know, this clause imposes a flat prohibition against the use of substances which can be made to produce cancer when ingested by animals, no matter if the dosage in animals is a million times the intended dosage in man or if other experimental conditions are totally unrelated to the actual use of the substance in our society.

As you are also aware, the Senate did not include such a sweeping decree in the similar color legislation (S. 2197) which has passed there.

With very limited experience under such a provision in the Food Additives Act, it has become apparent that conditions neither predicted nor intended by its supporters have resulted from its passage. The quandaries and the undesirable effects will only increase unless a more scientific approach is adopted.

In this testimony we will demonstrate that such a clause is unscientific and works against the broad public interest. More particularly, we will show the limitations which it imposes upon agricultural progress through research; and we will suggest a slight modification in the language of the amendment which completely protects the public health while at the same time permitting all the people to benefit from technological advances in agriculture and in food and drug processing.

The main objection to the Delaney amendment is its rigidity. It allows for no scientific judgment of the results of research. Consequently, decisions on purely scientific matters are imposed in advance by an absolute fiat, rather than by permitting careful consideration of all the facts in individual cases. Such an absolute doctrine inevitably results in injustices and unrealistic situations.

All we ask is that the Food and Drug Administration be enabled to apply scientific judgment as to the safety of all the substances involved. Certainly, the FDA should and will protect the public health and serve the public interest.

Congress and the Food and Drug Administration have increasingly recognized that chemical substances, even though harmful above certain levels in man or animal, can be of great benefit if used under proper controls. To provide for the safe use of such substances has been the fundamental trend and purpose of modern legislation dealing with pesticides, fungicides, insecticides, weed killers, and food additives.

This is the essential purpose of the color legislation now before you. Under the existing coal tar color provisions, we have found that because of absolute and inflexible language in the law, we will be unable to use substances which even the regulatory agencies concede to be completely safe for their intended use.

So now it has been generally agreed that the law should be amended to allow for some reasonable and careful scientific judgment on these matters. And yet the cancer clause imposes in one particular field precisely the same kind of absolute or per se doctrine which has proved so unworkable in the coal tar color provisions and which the legislation before you is designed to correct.

Let me illustrate the dangers of such a clause with the case of one chemical substance with which I have had a great deal of personal experience—diethylstilbestrol. Its safety in man and animal has

been fully established for years. This substance has been used in human medicine for more than 20 years and, in addition, is being used in feeds to increase the weight and improve the feed efficiency of about 75 percent of all the beef cattle in feed lots in this country today. It has added millions of dollars to the Nation's economy.

Yet, under the Delaney amendment, this completely safe and very valuable chemical could never have been developed and introduced in animal feeds and its many benefits to farmers and consumers would never have been realized. Even now, the Delaney amendment prohibits new uses of this chemical and even prohibits extension of present uses.

So that you may have more complete evidence of the safety of stilbestrol, we would like to submit for the record a review of 61 of the many scientific papers in the literature. At this time I will only briefly summarize this document, entitled "Safety of Diethylstilbestrol."

As a preface, I should emphazie that there is no detectable residue in beef or sheep which have been fed stilbestrol under recommended conditions; so it cannot cause any side effects. A discussion proving the safety of material that is not present in food is, at the very least, somewhat academic. However, because of the emotional atmosphere surrounding the subject of cancer and the Delaney amendment today, it seems advisable to review the facts.

The responsibility—moral, scientific, and legal—for introducing a new drug into medicine or into agriculture is not one that is taken lightly either by the Food and Drug Administration or by industry. It shou'd be of special significance, then, that the FDA has examined data presented for six different uses and declared stilbestrol safe for each intended use.

First, in 1941, at the request of the FDA, the pharmaceutical industry submitted clinical results on 8,000 women who had received stilbestrol as medication, some for extended periods of time. As a result of these and other data, the FDA permitted this chemical to be used in human medicine. The results of its continued use during the past 18 years have prompted the FDA to declare this drug to be generally safe for use, and stilbestrol is no longer subject to special requirements as a "new drug" for human medication.

In 1947, 1954, 1955, 1957, and finally only last year, in 1959, the FDA examined data and each time allowed applications to become effective for uses in the agricultural field.

Since 1941—actually since about 1939, when the material first went into clinical trial—stilbestrol has been administered to hundreds of thousands of people. It is estimated that last year there were at least 350,000 people in the United States—300,000 women and 50,000 men—being treated with stilbestrol.

The dose of stilbestrol used in various studies should be noted particularly. It is not uncommon to see reports of the use of stilbestrol in diabetic women in amounts as high as 120 milligrams per day. This is more than a billion times the amount of hormone that would be present in 1 pound of meat if it were assumed that stilbestrol had been misused as an animal feed to such an extent that a residue of 0.3 part per billion could be detected in the meat.

The average therapeutic dose in human beings is probably closer to 0.5 to 1.0 milligram per day. However, even this dose is thousands

of times higher than any conceivable amount of material that could be obtained by eating meat. For example, even if we again assume a residue of 0.3 part per billion in meat, an individual would have to eat 7,300 pounds of beef per day to obtain a safe dose of 1 milligram. This illustrates the very wide margin of safety involved in the use of stilbestrol in animal feeds.

Many publications of outstanding experts in the field of endocrinology may be quoted on their experiences with the safe administration of stilbestrol to human beings.

I will cite only three of the more recent studies.

Dr. W. R. Frazier, after reviewing the literature and after considerable personal experience, recommends continuous estrogen therapy for life after menopause. He concludes, in a report published in the Western Journal of Surgery for December 1959, that there is no danger of cancer resulting from this treatment.

An article from Massachusetts General Hospital and the Harvard Medical School by Drs. S. Wallach and P. H. Henneman appeared in the Journal of the American Medical Association for November 21, 1959. It reviews the cases of women who had been on prolonged estrogen therapy from 4 to 25 years and draws the conclusion that there is "no justification for the fear that mammary and cervical carcinoma may result from this therapy."

In the J.A.M.A. for December 26, 1959, Drs. J. A. Nicholas and P. D. Wilson published a report from the Cornell University Medical College. They said of their study:

> No cases of cancer have occurred, nor are we impressed that the often-quoted relationship between the use of sex hormones and the production of cancer is actually substantiated by any valid clinical evidence in human beings.

You will note that all three of these studies have been published within the past 3 months.

These three current observations serve to confirm the conclusion made in 1954 by Dr. John A. Larson, of the Northwestern University Medical School.

He stated, in part:

> Certainly enough evidence has accumulated to indicate that any correlation between estrogens, endometrial carcinoma, delayed menopause, myomas, squamous metaplasia of the cervix, and cirrhosis are most probably mythical.

The fact that these observations refer to people under a physician's care is completely irrelevant when considering the overall safety of stilbestrol. I have yet to see a chemical that has been detoxified by a doctor's prescription.

With respect to the use of stilbestrol in animal feeds, I will quote only two of the many authoritative scientific judgments.

In 1956 a symposium on medicated feeds was sponsored by the Department of Health, Education, and Welfare, Food and Drug Administration, Veterinary Medical Branch. At this symposium the use of stilbestrol in feeds was discussed at great length. Dr. Albert J. Holland, Jr., then medical director of the FDA, in summarizing the discussion and the status of stilbestrol, made this statement:

> Our position, I think, is very clear. All of the data, all of the work, all of the literature we have had occasion to study and review over a period of many, many months preponderantly led to the conclusion that diethylstilbestrol as proposed for use in cattle feed was perfectly safe.

Finally, I quote from a critical review made in 1957 by the Council on Foods and Nutrition of the American Medical Association, with the cosponsorship of the Nutrition Foundation, Inc. The report was submitted by Dr. George M. Briggs and was presented from the Laboratory of Nutrition and Endocrinology, National Institutes of Health, Public Health Service, U.S. Department of Health, Education, and Welfare.

The council reviews all of the information on stilbestrol. The conclusion is as follows:

> Meat produced from these animals contains a negligible amount of estrogen activity, supplying from 0 to 1 gamma of estrogen per day in the human diet. This amount presents no hazard to man, since it is considerably less than that normally present in the body and much less than the therapeutic dose. The amount of estrogenic activity is no greater than that in an ordinary diet containing milk, leafy vegetables, cereals, and meat or organs from untreated animals.

These are the opinions of the experts. They say that this chemical, used in hundreds of thousands of human beings, is safe at much larger doses than could conceivably be obtained by eating the meat of cattle fed this substance. The report of the AMA Council even permits a residue.

And yet, even with all this evidence of complete safety, under the absolute doctrine of the cancer clause, stilbestrol could not have been used as a feed additive. It is in use now only because some applications were allowed before the Delaney amendment was adopted.

Stilbestrol faces a continuing problem under the Delaney amendment because it can be made to cause cancer in a few special animals, under certain conditions. It is very important, however, to understand just what animal tests have produced cancer—and the fact that most efforts to produce cancer in animals with stilbestrol have not resulted in cancer. The evidence here again illustrates the danger of substituting per se decress for the careful exercise of free scientific judgment.

Stilbestrol can be made to cause cancer in guinea pigs, Syrian hamsters, a few strains of mice, and a few strains of rats. Most of the work has been done with mice. Even with mice very special conditions must prevail before tumors are obtained. These conditions involve special breeding to obtain high spontaneous susceptibility to cancer.

Since cancer can be produced in only a few strains of animals—and then only under special conditions—the species in which negative results are obtained are also significant. Attempts have been made without success to cause cancer by the use of stilbestrol in the following animals: most strains of rats; most strains of mice; monkeys; dogs; cats; goats; rabbits; pigs; and fowl—for example, White Leghorn, Rhode Island Red, Barred Rock, Egyptian Racer, Hyline turkey, and even ring-necked pheasant.

Experiments with monkeys are of special significance. In spite of years of administration, no cancer has been produced in the monkey by stilbestrol. In addition, although millions of cattle and sheep have received stilbestrol in feed, no case of cancer has been reported in these animals.

A final point in considering the safety of stilbestrol for use as a feed additive makes even more evident the unreasonable nature of the can-

cer clause as it now stands. When attempts are made to measure residual stilbestrol in beef tissue by one of the most sensitive test procedures used in analytical chemistry, capable of measuring 2 parts per billion, the result is always negative. Even though there is no residue present, new applications for the use of this chemical as a feed additive cannot be allowed to become effective because of the present Delaney amendment.

Therefore, we have the situation of a chemical that has been used with safety for 20 years in hundreds of thousands of human beings in amounts up to a billion times what could be present in animal tissue even if misused when included in feed; we have a chemical that can be made to cause cancer in only a few species of animals under very special conditions but cannot be made to cause cancer in the vast majority of animals; and, finally, we have a condition in which the chemical is not even present in the tissue of the meat consumed by man. Yet, because of the unfortunate terminology of the cancer clause, the present uses of stilbestrol cannot be extended and new uses cannot be allowed.

I have spent considerable time on stilbestrol because experience gained with it under the Delaney amendment provides a good example of what happens when the element of scientific judgment is eliminated from the evaluation of research.

Another example of the problems arising when the Delaney amendment is applied can be seen in the case on arsenicals. Several of these chemicals are employed in improving weight gains of swine and controlling the highly infectious disease of coccidiosis in poultry. The arsenicals add millions of dollars to our economy through control of coccidiosis alone.

As with stilbestrol, the arsenicals have been given prior sanction by the FDA as safe for their intended uses. Delaney amendment provisions have prevented the further clearances of arsenicals in feeds, even though it has never been demonstrated that the organic forms of these compounds cause cancer.

If the spirit of this clause were exercised to the extreme, if we eliminated from our lives everything that caused cancer in animals, mankind would be reduced to sitting around in the dark, naked and hungry, waiting to die of cancer.

In a search of the literature, the following are only some of the things that have been implicated in carcinogenicity in animals: Ultraviolet light and, therefore, sunlight; coffee, tea, milk, cream, cocoa, claret, caffeine, whisky, sulfonamides, fat, cholesterol, vitamins, extracts of human tissue, eggs, sugars, various plastics and synthetic fibers, detergents, common solvents, and metals.

Estrogens have been shown to cause cancer in animals, and the following foods have been shown to contain estrogens: Normal untreated beef and chickens, milk, soybeans, corn, lettuce, alfalfa, clover, wheat, oats, lobster, beets, potatoes, and honey.

These examples will serve, it is hoped, to demonstrate the unreasonable and unscientific nature of a clause which prohibits any use in foods or animal feeds of any substance which can be made to produce cancer in animals even under the most unusual and extreme circumstances.

In discussing the safety for human use of materials that cause tumors in experimental animals, one of the points of disagreement has

been whether or not a "threshold level" can be established—a "threshold level" is used here to mean a dose below which an animal does not develop cancer, but above which it does.

In the scientific literature are numerous examples of experiments applying repeated doses of carcinogens at various levels of exposure. They show clearly that, in many cases, at low levels of exposure no cancers or tumors developed during the entire life of the test animals, although at higher levels cancers did appear.

The Department of Health, Education, and Welfare, in at least one area, approves of the concept of safe levels. At his news conference on March 16, 1959, Secretary Flemming said:

> Many scientists are seriously concerned with the cumulative effects on human beings of repeated small exposures of radiation * * *. Our scientific information at this time is not sufficient to evaluate precisely the long-term health effects of the small amounts of radioactivity now contained in water, air, milk, and other foodstuffs. Continuing and expanding efforts will be made to put ourselves in a position to make precise evaluations. The Public Health Service has repeatedly emphasized that the amount of radioactivity found in milk is well within the tolerable limits as established by the National Committee on Radiation Protection and Measurement. These limits are the only benchmarks now available.

Here we clearly have a position that, although radiation is harmful and an exact level cannot be specified above which radiation is dangerous and below which it is safe, scientific judgment has been used to declare a particular level safe. No one has suggested a decree forbidding the use of all foods contaminated by radiation. Secretary Flemming emphasizes "that these so-called permissible limits are only calculated estimates," subject to change as more data become available.

Again, at a news conference on August 13, 1959, Secretary Flemming reported that radiation levels in alfalfa hay samples in four States were well above maximum permissible levels over an entire lifetime in human diet. But he pointed out that milk from cows fed this hay would have much lower levels and "this radioactivity, by itself, is not regarded as a current threat to the public health."

Only a month ago, January 12, 1960, another report was issued by Secretary Flemming indicating the levels of strontium 90 in wheat, cabbage, potatoes, and soybeans, without any suggestion that these small levels were unsafe.

Further, concerning threshold levels, in his report of January 26, 1960, to this committee, Secretary Flemming quoted from a forthcoming report by the Subcommittee on Carcinogenesis of the Food Protection Committee of the National Research Council-National Academy of Sciences to the effect that—

> meaningful extrapolation from levels of carcinogens in the diet of animals which have no effect on the animal to a safe level for man is "currently impossible."

However, the next sentence of the same report reads:

> It seems reasonable to infer, however, that a no-effect level exists for man as well as for the laboratory animal.

Secretary Flemming also quoted the concluding paragraph of this report. I would like to quote the concluding two paragraphs:

> The assignment of a tolerance level, or a safe level of use for man, of a demonstrated carcinogen must at present rest largely on the evaluation of alternate risks and values which usually cannot be expressed in quantitative terms. Quantitative knowledge about the carcinogen; e.g., the slope of the dose-response

curve, the maximum experimental no-effect level, the minimum technologic amount necessary for the proposed use, can, however, be taken into account in assigning such a tolerance level.

Because of the vagueness of present knowledge concerning quantitative aspects of the carcinogenic process, tolerances greater than zero for carcinogens as food additives probably are justified only if (1) values to the public are such that a zera tolerance would constitute an important loss or hardship, and (2) there is no reasonably good noncarcinogenic alternative.

In view of the reference to "values to the public," it might be well at this point to consider the general benefits to our whole society from feed additives and other agricultural and industrial chemicals.

It is inconceivable that it should be necessary to justify the use of these substances. Only very recently, however, it was suggested that removing these products from the market would serve two purposes: (1) Prevent people from getting cancer, and (2) solve the surplus food problem.

I would certainly agree that the food surplus would vanish—very rapidly.

I doubt if many people would seriously argue for removal of all chemicals from agricultural production, but I believe that it would be useful to spend a few minutes reviewing the dramatic impact which chemicals have had upon our farm economy and its ability to meet the needs of a rapidly growing population.

All of this, I hasten to add, very definitely involves the whole concept of a rigid cancer clause. For such a clause, as I have demonstrated in the case of stilbestrol, can inhibit or prevent the use of safe and highly beneficial agricultural chemicals for reasons totally unrelated to their actual use. Even more serious, perhaps, the danger of such a ban on safe and beneficial products threatens to impede the quest of scientific research for more useful agricultural chemicals.

One hundred years ago a farmer in this country produced enough food for himself and three other people. Thirty years ago he produced for himself and nine other people. Today he produces for himself and 25 others.

Today's agricultural production is being accomplished by 7.5 million farmworkers. This is 33 percent fewer than there were only 20 years ago, and this group is feeding a population more than 33 percent greater than at that time. Since 1954 the withdrawal of agricultural land for use as homes, industrial sites, airports, and highways has exceeded the land reclaimed, and the number of farm acres has shown a decline.

We have been very fortunate in the past in our ability to meet the demands placed upon agricultural production. But what about the future?

I think we can attribute increased efficiency in agriculture mainly to three things: (1) Mechanization, (2) development of improved strains of crops and animals, and (3) uses of chemicals. Just the other day one of your colleagues in the House, Representative Dixon (Republican, Utah), said it has been estimated that 40 to 50 percent of the increase in U.S. agricultural production since World War II has been due to chemicals.

In the face of the decline in the number of farmworkers, plus a falling farm acreage, plus a rapidly expanding population, it requires no great mental gymnastics to predict what will happen, unless

we continue not only to produce efficiently but to increase the rate of efficiency as well. The present food surplus is about 5 to 8 percent of the total food produced. Again, simple arithmetic tells us that this will be absorbed very rapidly by the expanding population unless efficiency likewise increases.

For example, the National Livestock and Meat Board estimates that by 1975 to maintain the present per capita consumption of meat will require an additional 42 pounds for each 100 pounds produced now, or a total annual increase of 12 billion pounds. This increase certainly cannot be accomplished by removing from use any of the available methods of increasing production. Think, then, what would happen if, as a result of a sincere but nonetheless ill-conceived action, we should be forced not just to stand still but to go back where we were some years ago.

I can give you definite figures from my own experience with stilbestrol. If it were taken off the market today, the farmers of this country would have to produce 360,000 more beef animals this year to obtain the same amount of meat that would be produced with the use of stilbestrol. This would supply the normal beef consumption for 2.5 million people for 1 year.

Similar statements could be made about other agricultural products. For example, in November of 1956 the Food Protection Committee of the Food and Nutrition Board of the National Academy of Sciences-National Research Council said:

> No one knows exactly what would happen if use of pesticidal chemicals on the farm should be abandoned, but it is safe to say that we could not commercially produce apples, peaches, potatoes, citrus, and tomatoes, to mention only a few crops; and yields of others would be drastically reduced.

The same report recognizes one other basic consideration in dealing with agricultural chemicals when it says:

> Most pesticides have some toxic properties, but this does not necessarily mean that their use will create a hazard to public health. Toxicity and hazard are not synonymous terms. Toxicity is the capacity of a substance to produce injury; hazard is the probability that injury will result from the use of the substance in the quantity and manner proposed.

The two should not be confused. A compound might be the most toxic substance known, but if used correctly it would not be hazardous.

Many other figures could be quoted to justify the use of these agricultural chemicals. Last year the farmer spent $1.5 billion for agricultural chemicals; yet, in spite of this, the overall loss from weeds, plant and animal diseases, and insects exceeded $13 billion. Without the agricultural chemicals it is difficult to estimate what the losses would have been.

The specific field of pesticides is a good example of the progress that has been made. In 1938 it was estimated that insects destroyed 25 percent of what farmers were raising. Twenty years later, as a result of new and improved pesticides, the figure was less than 12 percent of a much greater agricultural output.

These chemicals are combating some 10,000 varieties of injurious insects in North America—and the farmer must be constantly vigilant. For example, if unchecked, a pair of flies starting in April could produce 191 million trillion flies by August. This would be enough to cover the entire earth to a depth of about 47 feet. Other forces of

nature are at work to aid in keeping these insects under control, but without the use of pesticides we would find ourselves in the position of 20 years ago when 25 percent of agricultural production was lost.

In his testimony of January 26 before this committee, Secretary Flemming said that the Government—

> cannot fail to place at the top of its list of priorities the health of all the people, even though by so doing it may be or may appear to be acting against the economic interests of a segment of our society.

Certainly we agree with the part of the statement that refers to the health of all of the people; and if by a "segment of our society" is meant only those few thousand industrial organizations producing agricultural chemicals we would agree with that. However, the problem is not that simple. It is not just a segment of our society that may eventually be affected—it is our total society.

The few figures I have quoted on the importance of these agricultural chemicals should prove that. As mentioned before, the National Research Council-National Academy of Sciences pointed out the effects of eliminating pesticides; namely, the probable complete elimination of certain crops and the reduction in the yields of others. Certainly, this is of national importance. The consequences of this action could be an actual shortage of food in this country or, at the very least, a sharp rise in the cost of food to the consumer.

To give an actual example, it is conservatively estimated that the use of stilbestrol in Iowa last year saved the farmers of that State $15 million. To put it another way, without stilbestrol it would have cost the farmers of Iowa $15 million more to produce the same amount of beef (assuming that it would have been possible to increase the number of animals produced). Multiply this example by thousands of other examples and you arrive at the billions of dollars saved the consumer each year by the use of chemicals. So, you see, we are not talking about these actions affecting a "segment" of our society. We are talking about effects, very serious effects, on our total society.

Finally, I want to mention very briefly the effect that the present Delaney amendment, its interpretation, and the expanding philosophy of using the "spirit of the Delaney amendment" will have on the future of research in agriculture, and consequently on agriculture itself.

I want to stress—and I hope I have already made it clear—the importance to the future of our country of being able to make two ears of corn grow where only one grew before, or of growing two steers or two heads of cabbage or two cranberry bushes or two stalks of wheat.

And I want to point out what will happen—what has already happened—in research as a result of the activities of Government groups in enforcing their interpretation of the Delaney amendment.

Most industrial research programs involve multimillion-dollar budgets. It is probably superfluous to say that every research project has to be very carefully scrutinized before being undertaken. In the field of agricultural research it may require anywhere from 2 to 5 years or longer and from $750,000 to several million dollars to develop a product. If, therefore, there is the possibility that a useful product will be kept from the market as the result of an inflexible decree, then I think it is quite obvious that industry cannot take a

chance on the expenditure of possibly millions of dollars and years of research time in developing such a product.

We have, in our company, halted work on projects whose products might conceivably come under the Delaney amendment or the encompassing spirit of the Delaney amendment. This has included products already in field trial—products which we are sure would be a contribution to agriculture.

I can tell you, too, that one major industrial company has discontinued completely its agricultural research farm as a result of the uncertainty of the future of research in this field.

Over a month ago I took part in a symposium arranged by one of our great universities.

Mr. DINGELL. Was that at Iowa, Iowa State?

Dr. CARNEY. This was in Nebraska.

The title of the seminar was "The Effect of the Delaney Amendment on Research." A similar symposium is to be held by another university early next month. Incidentally, that is at Purdue.

The people who arranged these symposia are not the segment of society with a direct economic interest in the sale or even the use of these products. They are the people who are interested in the progress of research, in the use of the results of this research in agriculture, and in the effect of the results of this research on our national problems.

I think it is particularly significant that this group of people have recognized so early the stifling effect that results from the elimination of scientific judgment in evaluating their research.

I shall conclude by suggesting what the Pharmaceutical Manufacturers Association believes to be a logical solution to this problem.

Certainly, we, along with Congress, are in favor of doing everything we can to prevent cancer. We believe that Congress was making a very sincere effort to write a law that would protect the health and welfare of the people of the United States, and we certainly agree with that objective. However, we do not believe it was the intent of Congress to prevent the use of chemicals that would be safe when used in regulated amounts and under proper conditions, to cause economic hardships for the farmer and consumer, and to stifle research in an area of critical importance to meeting the future food requirements of our country.

Probably the entire objection to the Delaney amendment could be summed up by saying that it allows of no scientific judgment. We can see no good reason why scientific judgment should not be used in determining the safety of materials in the field of cancer if the same judgment is to be used and trusted in determining the safety of every other drug or additive in every other field.

And, as you know, it is used in every other field. Every time the Food and Drug Administration allows a new drug application to become effective, they have used scientific judgment, and they have, in effect, set a tolerance, since with all new drug applications data must be supplied showing levels of dosage at which the drug becomes toxic.

Cancer, therefore, has been singled out in the entire field of science for the application by legislation of a doctrine which permits no scientific judgment in considering the merits or hazards of specific products.

The Commissioner of the Food and Drug Administration testified to this committee less than 2 years ago, when the food additives legislation was under consideration:

> We see no more reason to single out cancer production for specific mention in the legislation than to single out the production of high blood pressure, destruction of blood-forming elements of the body, or a host of other disorders.

This is just as sound public policy today as it was 22 months ago.

Even so, we would have no objection to this special kind of treatment—to a Delaney amendment—if the element of scientific judgment were included, if the right of scientific judgment were returned to the Food and Drug Administration where it properly belongs.

To accomplish this objective, we propose a change in the wording of section 706(b)(5)(B) so that it reads as follows:

> (B) A color additive (i) shall be deemed unsafe, and shall not be listed, for any use which will or may result in ingestion of all or part of such additive, if the additive is found in amounts and under conditions reasonably related to the intended use to induce cancer when ingested by man or animal, or if it is found, after tests which are appropriate for the evaluation of the safety of additives for use in food, to induce cancer in man or animal, and (ii) shall be deemed unsafe, and shall not be listed, for any use which will not result in ingestion of any part of such additive if, after tests which are appropriate for the evaluation of the safety of additives for such use, or after other relevant exposure of man or animal to such additive, it is found to induce cancer in man or animal.

We also believe that a similar change should be made in the Food Additives Act.

This, we believe, is a very reasonable change. It would carry out what we believe was the original intent of Congress in adopting the Delaney amendment. It emphasizes the importance of cancer, if such emphasis is necessary, but it leaves some element of scientific judgment in the hands of an agency which is well qualified to exercise its discretion in the best interests of the public.

Thank you, Mr. Chairman.

The CHAIRMAN (presiding). Thank you, Dr. Carney, for your very informative presentation here on behalf of the Pharmaceutical Manufacturers Association.

You did discuss the agricultural problem. I gathered that you were not necessarily representing the agricultural interests but your testimony indicated that you might be.

Dr. CARNEY. I was only emphasizing the importance of the research in this field, the importance of the products we are talking about.

The CHAIRMAN. I have seen reports—and I emphasize that there are reports that have been called to my attention—of certain agricultural groups recently urging action in connection with this entire problem of food additives. I do not know that we have had any formal suggestions before this committee as yet for changes in accordance with their desires. I assume you have no relationship with the agricultural interests so far as your presentation is concerned this morning.

Dr. CARNEY. No relationship whatever. The drug that I talked about, principally, diethylstilbestrol, is used in the agricultural field and I want to emphasize the effect of removing that drug from the market as a result of a decree rather than scientific judgment.

There is some other reason besides selling the drug for its use.

The CHAIRMAN. Mr. Mack.

Mr. MACK. Doctor, is stilbestrol produced by most of the manufacturers, pharmaceutical manufacturers?

Dr. CARNEY. No. I think stilbestrol is produced only by three companies in this country. Stilbestrol can be produced by anybody. It is an open compound.

Mr. MACK. It is only produced by three manufacturers?

Dr. CARNEY. Yes. As nearly as I know, three manufacturers; yes, sir.

Mr. MACK. You indicated it was very important in the production of beef animals?

Dr. CARNEY. Yes. About 75 percent of all of the beef animals in feedlots are on stilbestrol. Perhaps I should amplify my first statement and say what I mean by production. I meant production of the crude chemical. There are hundreds of feed manufacturers selling stilbestrol to the farmer. Possibly I misunderstood what you meant. I meant the actual production of the crude chemical stilbestrol, which then goes into feed which is sold to the feed manufacturers, the feed mixers.

Mr. MACK. Are there any other chemicals used in the feeds similar to stilbestrol?

Dr. CARNEY. There is one other product, hormone, which is used by implantation in beef cattle, but that is the only other hormone with which I am familiar.

Mr. MACK. Are there any other chemicals that fall into the same category as stilbestrol?

Dr. CARNEY. By "category," do you mean use, sir, or activity? There are other chemicals that are used for increasing the weights of the animals. I think the fact that 75 percent of the animals in this country are on one product indicates that it is rather an unusual material.

Mr. MACK. Then would this Delaney amendment affect many other chemicals other than stilbestrol?

Dr. CARNEY. It would not affect any of the chemicals that I know of that are used in this field. You see, the two primary materials under the Delaney amendment now are the arsenic compounds and stilbestrol, which was mentioned specifically.

Mr. MACK. So stilbestrol is about the only one that really would be affected?

Dr. CARNEY. As far as the Delaney amendment is concerned now; yes, that is right.

Mr. MACK. That is all, Mr. Chairman.

The CHAIRMAN. Mr. Younger.

Mr. YOUNGER. Just a comment. I do want to congratulate Dr. Carney on a presentation of the subject which a layman can understand.

Dr. CARNEY. Thank you, sir.

Mr. YOUNGER. Thank you. That is all.

The CHAIRMAN. Mr. Roberts.

Mr. ROBERTS. Mr. Chairman, I would like to join the chairman in saying that I think this is a very informative statement. It is one that is very hard for me to use as the basis for questions. I am certainly not a chemist and Dr. Carney is certainly a great chemist.

Are there any other chemicals that you have in mind that would be eliminated by this test that are widely used in the agricultural field other than the one you mentioned with reference to feed?

Dr. CARNEY. As nearly as I know now, and as nearly as I know, the carcinogenic tests that have been run, stilbestrol, arsenic, because it is arsenic, probably, compounds now affecting thyroid because of the aminotriazole product, if there was a residue on the food that was eaten. Specific examples, I do not have right now, but I think there are materials coming along.

As I mentioned, in our own research we had materials that we had to discontinue because they did come under this ban on the amendment.

Mr. ROBERTS At page 12, you quoted from a press conference of March 16, 1959, in which you quoted Secretary Flemming with reference to radioactivity, to the effect that there was a tolerance as far as the amount of radioactivity was concerned and you indicated that certain benchmarks were available as far as radiation was concerned.

Do you think the Secretary has changed his mind since his statement in that conference?

Dr. CARNEY. His last conference, sir, was 1 month ago. I think January 12, 1960, in which he also reported strontium 90 levels without mentioning any danger. I would assume he has not changed his mind since meat containing strontium 90 has not been banned or milk containing strontium 90 or any of the leafy vegetables.

Mr. ROBERTS. But you believe since the poultry and cranberry incidents there may have been a change in his mind? He now believes that you cannot have any flexibility in this proposition?

Dr. CARNEY. No; I think he must still believe there is flexibility in strontium 90.

Mr. ROBERTS. I am talking about with reference to carcinogenic material.

Dr. CARNEY. Well, strontium 90 is a radioactive carcinogenic material.

Mr. ROBERTS. I am talking about the subject we have before us today with reference to color additives.

Dr. CARNEY. I hesitate to say what I think the Secretary thinks, but I do not believe he has changed his mind about carcinogenic materials of any kind. The coal tar colors do not produce cancer. I believe the people want to be permitted to set tolerances for coal tar colors. But there is no suspect of cancer in the coal tar colors. If a coal tar color was suspected of causing cancer, then I believe the Administration would request that this come under the Delaney amendment.

Mr. ROBERTS. I got the impression from his testimony that he believed that even when you had a minute quantity such as two parts of a billion that cause cancer in animals, that it should not be used by human beings.

Dr. CARNEY. That is correct. I agree with that; that is what he said.

Mr. ROBERTS. Do you believe that that is a correct view of the situation, or do you think that there should be more flexibility in it?

Dr. CARNEY. I believe there should be more flexibility in it.

Mr. ROBERTS. You disagree with the Secretary's viewpoint?

Dr. CARNEY. Yes, sir; I do.

Mr. ROBERTS. You are familiar with Dr. Mider's statement that the Secretary quoted from?

Dr. CARNEY. Yes, sir. I do not have too much disagreement with most of the things that Dr. Mider said in there.

Mr. ROBERTS. Well, do you agree or do you disagree with the part of Dr. Mider's statement when he said that we know so little about what triggers cancer at this particular time that if there is even the parts we mentioned, the two parts in a billion present, that it should no be used?

Dr. CARNEY. I think we already have two examples to which that statement does not apply: Stilbestrol is one of them—material that has been used for 20 years.

Mr. ROBERTS. As far as beef is concerned?

Dr. CARNEY. So far as anything is concerned; it is being used in human beings.

Mr. ROBERTS. I thought he took the position you could not use it in the production of poultry.

Dr. CARNEY. The Secretary took the position you could not use it in the production of poultry; the Secretary takes the position that any amount of stilbestrol is dangerous. I disagree with it.

Mr. ROBERTS. You disagree with the Secretary's position so far as the use in poultry is concerned?

Dr. CARNEY. Yes, sir.

Mr. ROBERTS. You say you think it could safely be used in poultry?

Dr. CARNEY. I think it could safely be used in poultry.

Mr. ROBERTS. That is all I have, Mr. Chairman.

The CHAIRMAN. Mr. Keith.

Mr. KEITH. Mr. Chairman, first, as the others have done, I would like to compliment you on your efforts to make any legislation this committee approves reasonable and therefore respected in the public's eye.

I would like to make a minor correction in your testimony; I believe it is on page 19 that you referred to cranberry bushes. We grow them on vines. [Laughter.]

Dr. CARNEY. That is accepted, sir. Thank you.

Mr. KEITH. That is the only flaw that I can find in your testimony. On the question of the part per billion, the Secretary expressed his view concerning that. It was my recollection that he did not say that they had found that cancer was caused by the presence of two parts per billion of trace in any substance. They have testing devices that will reveal the presence of these traces in that portion.

But I do not believe that the Secretary has ever conducted tests that would show that cancer was caused by such minute quantities as two parts per billion.

Dr. CARNEY. That is correct.

Mr. KEITH. I think most of the tests he has conducted or that have been conducted and to which he has referred, have been in substantially higher quantities of both the chemicals about which you are talking and aminotriazole than is found in residues either in the beef, poultry or the cranberry. This is one of the areas in which we need to have a judgment exercised.

With such superior testing facilities as he has—capable of tracing two parts per billion—you can almost find anything you are looking for.

Dr. CARNEY. That is a very good point. I would like to emphasize that you do not find any residue with two parts per billion tests. The test is sensitive to two parts per billion. Even using that test, you do not find any in beef. In fact, this expanded statement I gave you will show experiments where we added up to 50 times, I believe, the amount of recommended stilbestrol and even at that level we did not find any stilbestrol in the lean meat or in the fat. At 20 times the recommended levels of stilbestrol, we did not find any residue in any tissue of an animal, even with this thing that is sensitive to two parts per billion.

So the two parts per billion is the sensitivity of a, say, it is not the amount of material that was found there. The amount was zero.

Mr. KEITH. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. O'Brien.

Mr. O'BRIEN. No questions.

The CHAIRMAN. Mr. Glenn.

Mr. GLENN. You have said you think it is about 20 years they have been using stilbestrol in the feeding of cattle?

Dr. CARNEY. Not in the feeding of cattle. Now, this was 20 years in human beings.

Mr. GLENN. How long have they been using it in the feeding of cattle?

Dr. CARNEY. Well, the first feeding of cattle was in 1947–54.

Mr. GLENN. And was the sole purpose to increase the weight of cattle quickly?

Dr. CARNEY. To increase the weight, to increase the feed efficiency of the cattle, also. Excuse me.

Mr. GLENN. Go ahead.

Dr. CARNEY. For the same amount of feed intake you get more salable meat, more good meat, and the meat is also of excellent quality.

Mr. GLENN. That is what I was going to ask you. Do you know whether this is going to, is having any effect on the quality of the meat?

Dr. CARNEY. Of course, this is one of the first things we look at. The meat is very excellent.

Mr. GLENN. It is an improvement over the beef which we had before you used stilbestrol?

Dr. CARNEY. It is difficult to say. Naturally, we say there is an improvement and we say it is. This is a very difficult objective test to run because it is only an observation, but it really does tenderize meat, there is no question about that.

Mr. GLENN. The reason I ask that is one of the largest wholesalers in my hometown tells me the quality of the beef is not what it used to be, and neither is the bone substance of the same substance what it used to be, and he thinks it is because of the use of these chemicals and the quick-growing and quick-producing factors going into beef cattle today.

Dr. CARNEY. I think there must be an overabundance of the 25 percent of people who do not use stilbestrol in that district.

Mr. GLENN. I am sure he buys his beef cattle from the big producers.

Dr. CARNEY. Yes. Well, I am sure there is no evidence to show that the meat is inferior in any way; this I can say with certainty.

Mr. GLENN. You did mention, too, something about the use of coal tars in the manufacture of cosmetics. Can they not also use vegetable oils in producing the colors which are now being used, produced by coal tars?

Dr. CARNEY. Certainly you can use a lot of things, use a lot of basic chemicals for producing colors. I will put it that way. Some of the supposedly coal tar colors have no substitutes. Coal tar color to me does not mean anything because you can make exactly the same color synthetically, they do not come from coal tar any more. They are identical materials. Once we isolated them, then we can make them synthetically. So coal tar color is a very confusing term.

If you remember some of the hearings a few years ago, one of the people testifying got to the place where they got down to where carbon was a coal tar color and anything that contained carbon would classify material as a coal tar color. I think we would be on much safer ground if we talked about the safety of individual products, whether it is a coal tar color or a vegetable product, regardless of its source. If it is dangerous, it is dangerous; if it is not dangerous, it is not dangerous.

Mr. GLENN. That is all, Mr. Chairman.

The CHAIRMAN. Mr. Moss.

Mr. Moss. Dr. Carney, you have thrown a lot of material at us here in your statement, and to use it as a basis of questioning, on my part, at least, would require that I study it more carefully.

However, you would concede, would you not, that I could probably go out and find some well-qualified experts to take issue with almost every claim you have made?

Dr. CARNEY. I do not think I would admit that.

Mr. Moss. Well, you made the statement here a minute ago that the quality of beef was improved by the use of stilbestrol?

Dr. CARNEY. Yes.

Mr. Moss. I have heard the claim that it was not improved by the use of stilbestrol. I have heard substantially the same claims as Mr. Glenn: That it also goes to the bone structure, that it goes to the appearance of the animal.

Dr. CARNEY. I would doubt if these people——

Mr. Moss. I have some very good friends——

Dr. CARNEY. I would doubt if these people are very qualified experts in the field of stilbestrol.

Mr. Moss. Well, they make a living at raising and marketing of cattle, and they have an opportunity to compare those being fed and those not being fed stilbestrol.

Dr. CARNEY. But the fact that you get some inferior meat at the meat counter does not mean necessarily that stilbestrol caused the inferior meat.

Mr. Moss. I did not mean that, either. I merely ask you whether or not you would concede that I probably could go out and find well-qualified experts who would take issue with most of your conclusions. And you said, "No," you did not agree; you did not think I could.

Dr. CARNEY. No.

Mr. Moss. You think those who take issue with you would not be qualified?

Dr. CARNEY. I am sure there are some things which people would take issue with, they have already taken issue with it. But to say they have taken issue with most of them, I do not agree.

Mr. DINGELL. And well qualified people.

Mr. Moss. And well qualified people, yes; that was my qualification in my statement.

You compare the levels of strontium 90. I know there are those who maintain that any strontium 90 is dangerous.

Dr. CARNEY. That is right.

Mr. Moss. In my district I have some very good friends on the faculty of the University of California at Davis who feel very strongly on this point. But suppose we determine that any food has it, and most of the food has it, because we cannot control it. Russia now also produces some of these interesting devices that add to the total supply. What could we do?

We could not ban all of it. There are certain areas where we cannot really help ourselves. There are others where we should be most diligent in purifying whatever remedy is available. Is that not right?

Dr. CARNEY. There is one of the reasons I put so much emphasis on the use of these carcinogens in agriculture.

Mr. Moss. I agree with you, we must look to the use.

Dr. CARNEY. Yes.

Mr. Moss. But if we are going to take risks, we should at least hedge a little on the conservative side; should we not?

Dr. CARNEY. Oh, yes; I would agree entirely, we should hedge on the conservative side, but the basis of my whole statement is this hedging, and this whole basis should be on scientific evidence and not legislative decree.

Mr. Moss. And the basis area that has the greatest knowledge?

Dr. CARNEY. On the area that has the responsibility of making these decisions. It seems to me these are the people who should decide what information they need in order to make a decision on safety.

Mr. Moss. In other words, you would say we leave it to Food and Drug?

Dr. CARNEY. Right.

Mr. Moss. Completely?

Dr. CARNEY. Completely.

Mr. Moss. Without any guideline?

Dr. CARNEY. They, of course, are free to ask the advice of anyone in the country, and they have.

Mr. Moss. Without any guideline?

Dr. CARNEY. In other words, I do not think it is necessary to tell the Food and Drug Administration they should protect the interests of the people in the country. They have been doing that.

Mr. Moss. I do. I do, because sometimes we have not given them enough authority to do what they would like to, and so in the drafting of guidelines we have strengthened their hand. Would you not agree that that partially, at least, is necessary?

Dr. CARNEY. They have the authority now, you see, to do everything that the Delaney amendment would give them authority to do. The Delaney amendment does not give them any additional authority.

Mr. Moss. I understand if nothing is done this session that the

principles of the Delaney amendment will apply to your field of industry.

Dr. CARNEY. Yes. They can exercise their scientific judgment and say these are dangerous. The results might be the same, incidentally. I am not saying that they would not necessarily be the same, but the conclusion would be based on scientific judgment and not on a law that says we cannot use these things. If it is proven that these compounds we have coming out are carcinogens, if it is proven they are dangerous, then Food and Drug can keep them off the market without a Delaney amendment at all.

Mr. Moss. What percentage of stilbestrol consumed in this country is produced by Eli Lilly?

Dr. CARNEY. I would have—I do not have the exact figures, but I would say well over half.

Mr. Moss. Half.

Dr. CARNEY. Maybe as high as 75 percent.

Mr. DINGELL. And the bulk of it goes into animals?

Dr. CARNEY. The bulk of it goes into animals.

Mr. DINGELL. Principally cattle?

Dr. CARNEY. Principally cattle, and sheep have been approved for use.

Mr. Moss. That is all I have.

The CHAIRMAN. Mr. Nelsen.

Mr. NELSEN. I wish to thank the gentleman for his very fine testimony, and I would like to point out, in the livestock feedings as well as poultry, that I think it would be unfair for us to assume that everything that has been suggested might lead to some defect in the meat product.

For example, in poultry if those of us who live on a farm—and that is where I make my bread and butter—you can take poultry and crowd them and get them to the market in a very short period of time; you will find perhaps that the quality of the bird is not as good and as tasty as one that has been given a wee bit more time, and the same is true of beef. So the quality of beef could be attributed to many factors, and this could be one, sure, but it is not necessarily true it is.

Mr. Moss. If the gentleman will yield, the gentleman is apparently addressing his remark at me rather than Dr. Carney.

First, let me disclaim any connection with a farm as an operator. I do not live on one, I do not operate one, and, therefore, I feel that I am completely free of any of the special pressures which might crowd my judgment. I tried to review this objectively. My statement was that I had been told by those whom I regard as expert that their view of this matter was different from Dr. Carney's. I did not indicate whether or not I agree with them. I merely brought it out because the doctor had stated here, rather strongly, conclusions which would leave one to believe in some instances that there was no area of disagreement, and I wanted to illustrate very clearly that there are substantial areas of disagreement, that the conclusions of the doctor are his best judgment, but equally well informed men have strong convictions the other way.

Dr. CARNEY. Incidentally, the conclusions on the carcass quality of the meat are backed up by assays run on 33 of the land-grant colleges in the country who are reasonably objective in this type of thing.

Mr. Moss. Well, we have a great many land-grant colleges.

Mr. NELSEN. No further questions.

The CHAIRMAN. Mr. Dingell.

Mr. DINGELL. I was very interested in your testimony. I inferred from this, you were a cancer specialist since you talk so much on cancer; am I correct on that?

Dr. CARNEY. Sir, I would not be able to tell one tumor from another. My business is not either the diagnosing or the treatment of cancer. However, I have in my organization 1,400 people who are working on about a hundred different research problems in the field of medicine, and my job is not to diagnose these things.

Mr. DINGELL. How many of them devote their time to cancer?

Dr. CARNEY. My duty is to design experiments and analyze results.

Mr. DINGELL. How many of your people devote their to cancer?

Dr. CARNEY. We have one of the largest cancer programs in the country, sir. We are testing about 8,000 materials per year in this field. We just a year and a half ago bought a completly new building which is devoted exclusively to testing for cancer. We have a whole series of antibiotic people working on this. We have 60 people of a research organization now devoted to cancer. I think it is probably the largest effort we have, as far as people are concerned, in the whole field.

Mr. DINGELL. But you are not a cancer specialist?

Dr. CARNEY. No. On the assumption that some of you might rather have answers from an M.D. rather than a Ph. D., with the chairman's permission, I would like to introduce two of my colleagues.

Mr. DINGELL. I would just as soon ask you the question. This is your statement, and I would like to stick to your statement since you have been talking to it, and I would just as soon talk to you, Doctor.

You would not stack yourself up, let us say, or the Eli Lilly Co., against the National Cancer Institute in the field of knowledge on cancer and carcinogens, and so forth, would you?

Dr. CARNEY. That is an impossible question to answer, because there are so many specializations. I think we have people in our organization who are as good as individuals in the National Cancer Institute.

Mr. DINGELL. Yes. But in terms of experience and devotion and specific attention to the subject of cancer, you would not say that you were able to equal them, would you now?

Dr. CARNEY. One of the individuals that——

Mr. DINGELL. I just asked you a question.

Dr. CARNEY. Yes, I would, and I would like to explain and amplify that, if I could, Mr. Chairman, If I may.

The CHAIRMAN. Yes.

Dr. CARNEY. One of the individuals I was talking about is certainly an eminent endocrinologist in the field. Dr. Hines has been in the field of research for 30 years; he is an M.D.; he has had an experience teaching and in research——

Mr. DINGELL. I will agree that Dr. Hines is qualified in every way. As a matter of fact, you are not a cancer expert, are you, and as you said, you would not know one carcinoma from another any more than I would, and I would not know one from a bull fiddle.

You certainly would not set yourself up as superior to Dr. Mider, who is an Associate Director in charge of research at the National Cancer Institute, would you?

Dr. CARNEY. I hope, sir, you are not saying that an M.D. degree is necessary for this. If you do, you eliminate the directors of two of the major research organizations in the country.

Mr. DINGELL. I am not talking about M.D., Ph.D., or anything else. I am just talking about your knowledge of the subject of cancer as opposed to Dr. Mider.

Dr. CARNEY. No. I get my information from the same place——

Mr. DINGELL. Dr. Mider has some very interesting things to say here. He says:

> The chemical variety of natural occurring estrogens was sufficiently great to establish the thesis that agents possessing biological properties usually associated with female sex hormone activity could be carcinogenic.

He went on further on page 36 of his statement——

Dr. CARNEY. What page is this?

Mr. DINGELL (continuing). And I commend it to you since you apparently have overlooked him in your research, he went on to say about the middle of the page:

> Prolonged administration usually of stilbestrol has been accompanied by development of mammary cancer in some few male patients.

It would appear, then, that there is some substantial evidence that stilbestrol may possess some danger to certain persons in the human race from cancer; am I correct? I just asked you the question. You indicated to the committee that there was no danger, and I am asking you now here, I assume Dr. Mider is competent; if he is not, we had better fire him and get somebody who is; and he indicates to us that this substance possesses some grave dangers; now am I correct or not correct?

Dr. CARNEY. I think you have to read what this says, this is associated with cancer.

Now, in the appendix that I attach to this statement——

Mr. DINGELL. You cited a lot of people who said there was no danger and then I believe you said in your statement that there is no evidence that it does create cancer. Well, here is a competent man who says it does. Are you surprised?

Dr. CARNEY. I have—I am not surprised. I have an analysis of each of those individual cases in my report, case by case, and you can say no single case in the literature can be attributed to stilbestrol. All 12 of these cases are reported in the literature.

Mr. DINGELL. Then what you are saying is that Dr. Mider is all wet and does not know what he is talking about?

Dr. CARNEY. I would say Dr. Mider, if you asked him the direct question, would tell you there was no actual evidence that stilbestrol has caused cancer in man. Concurrently——

Mr. DINGELL. His statement to the committee was quite different.

Dr. CARNEY. Concurrently with the administration of stilbestrol individuals got cancer.

Now, the reason you give stilbestrol to a man is because he has some other type of cancer.

Mr. DINGELL. You give it to him because he has cancer?

Dr. CARNEY. Yes.

Mr. DINGELL. Then Dr. Mider's statement is plainly erroneous and grossly misleading to this committee.

Dr. CARNEY. No.

Mr. DINGELL. I am just asking you; that is what you are telling us; is it not?

Dr. CARNEY. No; I am only explaining what Dr. Mider, I think, is saying, and he would, if you asked him a direct question——

Mr. DINGELL. We will have Dr. Mider here before the committee.

Dr. CARNEY. He has no actual evidence that this caused cancer in man.

Mr. DINGELL. Let me ask you some questions. You people are directing your attention specifically to the Delaney amendment and more specifically to it as with regard to stilbestrol; am I correct?

Dr. CARNEY. Well, my statement is directed toward the Delaney amendment because primarily I am interested in the research aspects of it.

Mr. DINGELL. And as regards to, your experience in regard to, stilbestrol; am I correct?

Dr. CARNEY. And my fears for the future of research in this field.

Mr. DINGELL. And your specific experience in research in stilbestrol; is that correct?

Dr. CARNEY. Yes. I used stilbestrol as an example of my fears.

Mr. DINGELL. As to how it hinders and hampers research within the various agencies?

Dr. CARNEY. Yes.

Mr. DINGELL. That is a very interesting thesis in view of the fact you are selling how much stilbestrol for processing in animal feed?

Dr. CARNEY. I mentioned stilbestrol only as an example. It is a small part of the problem.

Mr. DINGELL. I think the record is very clear on what you had to say before, but I would like to hear what you have to say, in view of your grave fears, you are processing how much stilbestrol for cattle and sheep?

Dr. CARNEY. I do not understand, "in view of my grave fears"; I have no fears for the safety of stilbestrol.

Mr. DINGELL. I will get the reporter to read my question to you again, if you like.

Dr. CARNEY. I do not think I would understand it any better if he would read it back, "in view of our production of stilbestrol, what are our fears."

Mr. DINGELL. I do not like to engage in semantic exercises with a man whose technical knowledge should be superior to mine. However I do know a little about these things, and I have a few experts who can disagree with you on almost every point. I would appreciate it if you will respond to questions; if you will cooperate.

Dr. CARNEY. I want to cooperate a hundred percent.

Mr. DINGELL. Now, how much are you people marketing of stilbestrol?

Dr. CARNEY. In the first place, I do not know. It is a lot.

Mr. DINGELL. It is a lot, and the bulk of it goes into animal feed?

Dr. CARNEY. The bulk of it goes into animal feed.

Mr. DINGELL. From which a very substantial income is derived for your corporation?

Dr. CARNEY. From which an income is received.

Mr. DINGELL. Substantial?

Dr. CARNEY. An income. Again we are in semantics.

Mr. DINGELL. You sell a lot of stilbestrol?

Dr. CARNEY. We sell a lot.

Mr. DINGELL. Would you call it insignificant?

Dr. CARNEY. Oh, no, it would not be insignificant.

Mr. DINGELL. Now, let me go on here. You talked about the quality of your beef carcasses. Did you ever read the Western Livestock Reporter?

Dr. CARNEY. I never read the Western Livestock Reporter.

Mr. DINGELL. Well, I do not, either, but I am informed that they are a fairly reputable trade organ and have been around for 20 years and publish in Billings, Mont. They have some interesting things to say in one of their recent articles, and I commend it to you for reading, since you are so sold on this substance stilbestrol. The heading of the newspaper is "Stilbestrol Losing Luster Despite FDA Clearance."

And they go on down here and they say here:

Both stilbestrol-implanted cattle and those fed stilbestrol orally were either condemned outright or downgraded severely by cattle buyers, feeders, and marketing agents who, for the most part, said, "We don't want stilbestrol cattle. We either won't buy them at all, or else we'll discount them 1 to 5 cents a pound depending on the effects of stilbestrol that they show."

Then they go further in the article and say:

These points became evident in the stilbestrol opinions gathered by the Reporter staff Monday and Tuesday:

(1) Range-implanted cattle will show undesirable characteristics, ranging from high tailheads to the extreme "staggy" and "cowy" cattle that have been offered for sale at some markets.

(2) Best grade cattle do better with a minimum or complete absence of stilbestrol in their entire lifespan from birth to slaughter. Stilbestrol feeding or implanting may improve the ultimate appearance of plainer kinds.

(3) Cattle fattened with stilbestrol will develop cover fat, sometimes to excess, without corresponding marbling through the lean meat.

I assume you know what marbling is in meats.

They "shoot up" to grade fast on the hoof, but the deception becomes apparent on the killing floor and when the carcasses are on the rail.

(4) Feeders now using stilbestrol will continue to use it unless forbidden to do so.

Then they give some statements of people who favor the use of it but they also gave some statements of those who do not favor it.

Here is what one buyer had to say:

L. R. Rector, another of the leading buyers in and around Billings—

he is quoted as saying:

I have been buying some—the discount depends on the effects of stilbestrol implants that they show. Some that are way out of shape are knocked down 5 cents a pound—others are discounted 1 to 3 cents.

Then he went on and said:

As far as stilbestrol-fed fat cattle are concerned, Rector said, "They just aren't as good. Packers can readily identify them on the killing floor. They don't have the marbling, and you can see the fat loins and the high tailheads."

Here is another fellow:

Rial Havens, partner in the Montana Livestock Auction Co., noted that buyers in his area just don't like implanted cattle, and that many are writing a no-implant clause in their contracts. His observations of yearlings implanted in the spring:

By October, the tailbone rises clear out of form and they get more on the cowy side. There's a general feeling among buyers in our country that they don't want implanted cattle.

Considering his own feeding operations, Havens said that he has used stilbestrol-fortified feed on some of his cattle, but he doesn't like it well enough to continue. He explained that one principal trouble is that feed spilled by the cattle is eaten off the ground by his brood sows, and he's afraid the stilbestrol will cause them to abort.

Have you ever had any trouble with stilbestrol causing abortion in the animals?

Dr. CARNEY. No. Before we put it on the market, we saw what the effect was on sows and other animals in the field.

Mr. DINGELL. It was brought to my attention the other day where there was a whole test series of rats out at a State college at Montana, one of these land-grant colleges to which you referred, that had become sterile, and they traced it through the rat feed they bought, it was commercial rat food, back into the plant from which it had come, and they found the rat food had been processed in a bin which had been used to hold stilbestrol feed for cattle.

I was wondering if you had any comment on that?

Dr. CARNEY. No.

Mr. DINGELL. Is it not a fact that stilbestrol can have undesirable effects over and above cancer in human beings?

Dr. CARNEY. Yes; very definitely.

Mr. DINGELL. Very definitely, and it not infrequently does, as a matter of fact.

Dr. CARNEY. Again, I do not know what you mean by "infrequently" and I do not think it has undesirable effect when it is used correctly.

Mr. DINGELL. Under careful medical supervision, is that correct, in each point in your testimony?

Dr. CARNEY. I suppose, yes; everything that is used can have undesirable side effects under carefully controlled conditions.

Mr. DINGELL. Can I walk into a drugstore and buy a gallon of stilbestrol?

Dr. CARNEY. No.

Mr. DINGELL. I would have to have a doctor's prescription to get even a few milligrams?

Dr. CARNEY. Yes.

Mr. DINGELL. So you would call an ethical pharmaceutical one that has to be had by a doctor's prescription, one that the average citizen cannot get?

Dr. CARNEY. Yes.

Mr. DINGELL. Why is it I have to have a doctor's prescription?

Dr. CARNEY. Because the amount of material that you would be taking, you would get undesirable effects if you took too much. You have the same kind of careful control when FDA says we can use stilbestrol under careful conditions. I imagine I was talking about a thousandfold differences.

Mr. DINGELL. I am talking about human beings.

Dr. CARNEY. All right, human beings.

Mr. DINGELL. I am mentioning some of the things about cows, but it can have some dangerous other effects upon human beings?

Dr. CARNEY. That is correct.

Mr. DINGELL. So the uses which are made of it are made only in rather extraordinary cases, are they not, as a matter of fact, by doctors?

Dr. CARNEY. About 350,000 extraordinary cases a year; yes.

Mr. DINGELL. Out of how many total office visits and out of how much total patient load?

Dr. CARNEY. I do not know.

Mr. DINGELL. Actually, it is a very small percentage of the total patient load in the country or out of any individual doctor's practice?

Dr. CARNEY. Sufficiently to pick up a sample, though, of dangerous side effects.

Mr. DINGELL. But it is a very small patient load and only given in very extraordinary circumstances? As a matter of fact, its use has been declining in recent years because doctors do not care for the other effects?

Dr. CARNEY. I cannot tell you whether or not it has been declining or not, but I do not know of any reason that the doctors give for not using it.

Mr. DINGELL. But they do not use it as much as they used to?

Dr. CARNEY. There have been no unusual side effects shown up in recent years.

Mr. DINGELL. Let me ask you a question: Have you folks not noticed in your study that feed plants which use this sometimes have undesirable effects on the men who use it, who work in the plant?

Dr. CARNEY. As nearly as I——

Mr. DINGELL. For example, men will develop mammary glands from the dust?

Dr. CARNEY. Could I ask a question of one of my experts on that?

Mr. DINGELL. I am asking you; you are our witness.

Dr. CARNEY. I do not know. I have not heard of any.

Mr. DINGELL. I see. Let me just read you one little bit more from this article. I think you might find this enlightening here:

Still another contrasting opinion came from one of the Northwest's leading nutritionists.

And I am quoting here:

He noted that implanting will reduce an animal's grade about one-half a grade.

So that does not sound like it is doing the cattle a whole lot of good.

Dr. CARNEY. Of course, we do not have anything to do with implants. Ours is all cattlefeed.

Mr. DINGELL. Let us talk a little about implants.

In the packing industry they use almost everything in the pig and cow but the squeal, is that not right, as a general statement?

Dr. CARNEY. Yes.

Mr. DINGELL. They use ears and hide and liver and lungs and everything else of the animal; am I correct?

Dr. CARNEY. I assume you are; I do not know.

Mr. DINGELL. And if an ear which had—and ears are occasionally used for sausage meat, are they not?

Dr. CARNEY. That I do not know, either.

Mr. DINGELL. Well, let us assume that they are, because they are. What would happen if some of this stilbestrol was in the ear and got

in the sausage? It would remain, would it not, and it would ultimately come into the hand of the ultimate consumer; am I correct?

Dr. CARNEY. Yes.

Mr. DINGELL. Now——

Dr. CARNEY. I wish you would ask——

Mr. DINGELL. I was just wondering if you ever took the trouble to study—apparently you made considerable study on cancer, and so forth—did you ever take the time to study the report of the meeting of the International Union Against Cancer, which was held in Rome in 1956?

Dr. CARNEY. I have seen that report; yes, sir.

Mr. DINGELL. Would you say that was written by a group of irresponsible people?

Dr. CARNEY. In general, no.

Mr. DINGELL. In general, no. Would you say there were irresponsible people there?

Dr. CARNEY. No, I would not want to give my opinions of individuals; I hope you do not ask for that.

Mr. DINGELL. I would like to get it, because as a layman, I am very much impressed by it and if there is something wrong with it, and if they were nothing but quacks, we ought to know about it.

Dr. CARNEY. I would not say they were nothing but quacks, but the same people say, the same people who say these things are carcinogenic, say we ought to take a look at coffee and tea as carcinogens in human beings.

Mr. DINGELL. Let me ask you a question: When you drink coffee and tea, you do it as a free choice; am I right?

Dr. CARNEY. That is right.

Mr. DINGELL. But when you, let us say, get stilbestrol in an ear of a cow that has been slaughtered and finds its way into a weenie, you do not have a free choice?

Dr. CARNEY. When I drink milk contaminated with strontium 90, I do not have a free choice, either.

Mr. DINGELL. That is correct, and you do not particularly care for that either, do you?

Dr. CARNEY. I assume some scientific judgment has been made that this is safe.

Mr. DINGELL. You do not have a free choice on that, though; I mean you do not like it?

Dr. CARNEY. On milk?

Mr. DINGELL. Yes. Strontium 90 in milk. You do not like it, do you?

Dr. CARNEY. I have no fears of it, if that is what you mean.

Mr. DINGELL. Well, if you had your choice between a bottle of milk that had strontium 90 and a bottle which did not, which one would you have.

Dr. CARNEY. Under the present circumstances, I do not see any basis for making a choice.

Mr. DINGELL. Now, a dairy man does not have any choice in strontium 90 in milk, nor does the consumer who gets it?

Dr. CARNEY. Incidentally, you are talking about a choice between a diet containing stilbestrol and one not containing it. So far we have said there is not any, and we have said that——

Mr. DINGELL. If it is slaughtered 48 hours after in feedlot——

Dr. CARNEY. That is right.

Mr. DINGELL. If it gets slaughtered 48 hours after feeding, in fact there is residue present, is there not?

Dr. CARNEY. In this report, I have expanded on the stilbestrol evidence, under ordinary circumstances there is no stilbestrol in the lean meat and in the red meat of animals slaughtered 24 hours, I believe, after feed.

Mr. DINGELL. How about the fat?

Dr. CARNEY. In the fat. There is residue in the liver, very minute amounts.

Mr. DINGELL. Which is a prized item of human consumption.

Dr. CARNEY. And it would be dangerous if you could eat 7,300 pounds per day. [Laughter.]

Mr. DINGELL. That is a very comical statistic, and I appreciate it in this proceeding.

Dr. CARNEY. It is not comical. But it is relating to the use. It is a real statistic.

Mr. DINGELL. You are aware of the fact that the International Union Against Cancer came out and very clearly stated that we did not know the levels at which substances, the levels of exposure at which substances might create cancer? This same thing was said by Dr. Mider, who is one of the high officials—in fact, he is the Associate Director in Charge of Research at the National Cancer Institute.

So I mean——

Dr. CARNEY. I would agree with that.

Mr. DINGELL. Well now, you are in here telling us that this stuff is harmless at all levels, and I pointed out that there are people who say it is harmful.

Dr. CARNEY. I do not know a level above which it will cause cancer and below which it would not, but I know on the basis of experience, there are certain levels where it would not.

Mr. DINGELL. And you know there are human beings who react differently. One of us would react one way and another would react differently.

Dr. CARNEY. There is only one way to assess that and that is on the basis of use and experience, and there has been an experiment run on thousands of human beings over 20 years, the incidence of people who have cancer with stilbestrol, and the incidence in the population.

Mr. DINGELL. Your evidence is at variance——

Dr. CARNEY. Dr. Mider did not say the incidence of cancer was higher.

Mr. DINGELL. I will read it again, but I do not want to get into a wrangle here, but I would just like to read you some of the things that the International Union Against Cancer had to say on this.

Incidentally, Dr. Hueper, who is the head of the Cancer Institute, was present at that. Does he know what he is talking about?

Dr. CARNEY. Dr. Hueper is a gentleman who recommended that, he suggested that, coffee beans are carcinogenic.

Mr. DINGELL. Maybe we ought to fire Dr. Hueper and put you in his place.

Dr. CARNEY. And Dr. Hueper mentioned that one of these materials in coffee beans is benzopyrene, which could conceivably get into coffee when it is cooked.

Mr. DINGELL. Let me ask you here. The International Union Against Cancer had the following to say, and I assume you would disagree with it:

> Food additives should be permitted only if after long-term administration to at least two species of animals one preferably a nonrodent orally and internally in amounts which must be considerably higher than would be present in feed so as to give an adequate margin of safety and after the observation of animals over their lifetime for at least two generations, and one suitable species, they have no toxic effect. Any substance which causes cancer in man or which when tested under these conditions showed conclusively to be a carcinogen at any dosage level for any species of animal following administration by any route should not be considered innocuous for human consumption.

Do you agree with that statement?

Dr. CARNEY. Well, I would like to quote an opposition to that. The conclusions of our own National Research Council and National Academy of Sciences.

Mr. DINGELL. I am asking you what you think of this statement.

Dr. CARNEY. No, obviously, I do not agree with that. All of my testimony has been in disagreement with that.

Mr. DINGELL. Thank you. No further questions, Mr. Chairman.

The CHAIRMAN. I might say for the information of the others, we plan to come back at 1:45 to conclude these hearings.

Dr. Carney, I was quite interested in your statement with reference to coal tar. Obviously being a layman, I do not know much about the business. Did I understand you to say correctly that coal tar in its usage would not in any way produce cancer in any form?

Dr. CARNEY. Oh, no, no. Materials from coal tar certainly will.

The CHAIRMAN. Materials from coal tar?

Dr. CARNEY. Crude coal tar by itself will cause—certain materials in it. Benzopyrene is one of the most potent.

The CHAIRMAN. What kind?

Dr. CARNEY. Benzopyrene is one of the most potent cancer-producing materials, and it is present in crude coal tar. Crude coal tar by itself will produce tumors in certain animals under certain conditions.

The CHAIRMAN. As a matter of fact, I do not know enough about it to ask questions, to tell you the truth.

But you have heard so much about this during the past 12 years, it was interesting to me, and I certainly got the wrong impression from the discussion here a moment ago about the effect of coal tar. What was it you did say about the usage of coal tar that would not be harmful?

Dr. CARNEY. I do not think I mentioned coal tar.

Mr. Moss. Dr. Carney, your statement was that in coal tar colors you can synthesize the production of them and no longer depend on coal tar.

Dr. CARNEY. Yes. Some of them. Traditionally material coming from intermediates of coal tar were suspect because coal tar itself produced cancer. So that any material that could be classified as a coal tar product was suspected of causing cancer.

But more recently, material, the active materials of coal tar, at least some of them, have been isolated and are known. Now, other of these materials originally present in coal tar have been synthesized in the laboratory without ever having come in contact with coal tar and this was the distinction I was making.

The CHAIRMAN. Would it be an appropriate question—I do not know whether it is or not, very frankly—to inquire of you how many materials are present in coal tar that produce cancer, or has a tendency to do so?

Dr. CARNEY. There are about four that are known definitely to be potent carcinogens. I just do not know enough about the other ones. There might be more than that. But there are four that are mentioned: I believe some of these are mentioned in Dr. Mider's report, also, as potent carcinogens.

The CHAIRMAN. In color additives is it true that coal tar is not being used a great deal?

Dr. CARNEY. A lot of the materials are synthetic.

The CHAIRMAN. What would be the effect of the amendment you propose, where you would add the words to the language in the bill referred to as the Delaney amendment, "in amounts and under conditions reasonably related to the intended use."

Dr. CARNEY. Yes, sir.

The CHAIRMAN. That is in quotes underscored.

Dr. CARNEY. Yes, sir.

The CHAIRMAN. You would take the rest of the amendment as it is included in the bill?

Dr. CARNEY. The rest of that particular amendment.

The CHAIRMAN. Yes.

Dr. CARNEY. Yes. My remarks are directed only——

The CHAIRMAN. You would take the Delaney amendment, which, of course, has been changed to meet these particular circumstances?

Dr. CARNEY. Yes.

The CHAIRMAN. But it still has the connotation of the Delaney amendment, you would take section (B) as it is in the bill, and add the words which I have just read?

Dr. CARNEY. That is correct; yes, sir.

The CHAIRMAN. What would be the effect of adding the language, in your opinion?

Dr. CARNEY. That simply gives the Food and Drug Administration the right to make a decision based on the evidence at hand. They decide whether or not the results of the experimental tests are related to the actual use of the compound.

You see, under the present amendment, they have no right to do that now, even though we have a material that is not present, the wording of the amendment says it cannot be used.

The CHAIRMAN. In other words, to put it in simple terms, it would not take from the Food and Drug any authority to make determination as to whether or not it should be permitted?

Dr. CARNEY. It would give back to Food and Drug the right to make the determination, which they do not have now. The Food and Drug Administration now cannot say that stilbestrol is safe and can be used. We cannot get supplemental new drug applications approved on stilbestrol. People who are selling it can.

The CHAIRMAN. But even with this language, the Food and Drug could still say that it should not be used?

Dr. CARNEY. That is correct. They can say it cannot be used if they decided it was dangerous, if they decided it was safe they could decide it could be used, which they do not, have not.

The CHAIRMAN. You mentioned a moment ago some statement which was made, attributed to the Secretary of Health, Education, and Welfare, that without the Delaney amendment he could have made the same decision.

Dr. CARNEY. That is exactly right. He could have. But the decision would have been based on the fact that this material had been found dangerous as the result of experiment. You heard yesterday of materials that have never even been tested being barred from use because of the wording of the Delaney amendment. The arsenic compounds.

The CHAIRMAN. And your urgency here is to make this permissive with the Food and Drug Administration?

Dr. CARNEY. That is correct. This is really to give the Food and Drug Administration more authority than they have now under the Delaney amendment, I mean.

Mr. KEITH. Mr. Chairman, this is the essence of the problem with the cranberry grower with aminotriazole. The Secretary, if he discovers two parts per billion of aminotriazole, is required by law to withdraw it from the market.

Dr. CARNEY. Yes, sir.

Mr. KEITH. He has no discretion, no matter if he has conducted experiments with one part per hundred and discovered that cancer can result from that, he then is required by law to say that it cannot be used if there is any residue left.

Dr. CARNEY. If he discovers two parts per billion trillion, he still has to withdraw.

Mr. KEITH. Yes; and he says, to justify his request for this amendment, that he does not think that we are able to find any threshold. The amendment proposed would give him the responsibility to come as close as possible to finding a threshold and if he gets a lot of experiments in other areas that indicate there is no likelihood of cancer, he then can say——

Dr. CARNEY. Right.

Mr. KEITH (continuing). That, "All right, there is a threshold."

Dr. CARNEY. Exactly right.

The CHAIRMAN. Is it your contention that without the permissive authority that you are asking here that the public will be deprived of food and other products necessary to the health and welfare?

Dr. CARNEY. I can speak only from the definite experiences I have had. I have already told you of decisions we have made in the research field on products that would come under this. I think that is one example. There is no telling at all when under some unusual conditions one of these other materials might be shown to produce cancer in very high dosages, material already on the market. This, of course, is another danger.

The CHAIRMAN. You say because of this—did you give an example of a product that the public is being deprived of?

Dr. CARNEY. I did not give an example because it is still in our laboratories, still in our field trials. Of course, stilbestrol is a product that cannot be expanded now. The people who have effective new drug applications can continue to sell it, but nobody else can sell the material even though we believe the material is completely safe.

The same is true of the arsenic compound.

The CHAIRMAN. Is stilbestrol used as a treatment for certain conditions?

Dr. CARNEY. Stilbestrol in the animal field is used in 75 percent of the animals that are now in feedlots.

In human medicine, it has been used for over 20 years for various conditions in women and against cancer in men. There are over 20 years of experience of stilbestrol in man.

The CHAIRMAN. There is no prohibition of it being used as a medicine now, is there?

Dr. CARNEY. No. Evidently we can do anything we want to human beings, but we cannot put these carcinogens into animals.

(Dr. Carney's supplementary statement titled "Safety of Diethylstilbestrol" follows:)

SAFETY OF DIETHYLSTILBESTROL

INTRODUCTION

The object of the following report is to present data demonstrating the safety of diethylstilbestrol in animals and man, with specific emphasis being placed on its use as a feed additive in cattle and sheep.

There is no detectable residue in beef or sheep which have been fed diethylstilbestrol under recommended conditions; so it cannot cause any side effects. An argument proving the safety of a material that is not present is, at the very least, academic, if not philosophical. However, because of the emotional atmosphere surrounding the subject of cancer today, it seems advisable to review the facts on which the belief in diethylstilbestrol's safety rests.

The impossibility of proving that any compound will not cause cancer is recognized. The same statement could be made, of course, about a drug not causing heart disease or mental disease or any other disease. It is a scientific and logical impossibility. Therefore, no attempt will be made to try to prove that diethylstilbestrol or any other product is not a carcinogen and could not cause cancer. What will be proved is that when diethylstilbestrol is used as indicated it is safe.

If a carcinogen is defined as a product that will produce cancer in some animals, under certain conditions, then it is readily admitted that diethylstilbestrol, like literally scores of other substances in everyday use, can do this. However, it will be pointed out that diethylstilbestrol can be made to produce cancer only in certain special strains of animals and under special conditions. There is completely convincing evidence to indicate that it does not cause cancer in normal animals and in animals of a higher order. For example, it has been impossible to produce cancer in monkeys even after administering diethylstilbestrol continuously for many years. The tremendous amount of work done with human beings will also be emphasized.

HISTORY

Perhaps a brief look at the history of diethylstilbestrol's use in medicine and in agriculture would be helpful.

The responsibility—moral, scientific, and legal—for introducing a new drug into medicine or into agriculture is not one that is taken lightly either by the Food and Drug Administration or by industry. Under the 1938 Federal Food, Drug, and Cosmetic Act, the burden of proof to show that any new drug is safe before it is marketed is placed on the drug manufacturer. The FDA must examine all the evidence. If the evidence demonstrating safety is scientifically sound, the application is allowed to become effective and the drug may be marketed. If the evidence is not satisfactory, then the application is denied.

It should be of special significance, then, that the FDA has examined data presented for six different uses and declared diethylstilbestrol safe for each intended use.

In 1941, at the request of the FDA, the pharmaceutical industry submitted clinical results on 8,000 women treated with diethylstilbestrol. Eighteen hundred of these women had received this medication for a minimum of 6 months, and some had received it for as long as 2 years. As a result of this and other

data presented, the FDA permitted this chemical to be used in human medicine. The results of its continued use during the past 18 years have prompted the FDA to consider this drug to be generally safe for use, and diethylstilbestrol is no longer considered a new drug for human medicinal purposes.

In 1947 an application providing for the use of diethylstilbestrol implants in poultry was allowed to become effective after more than 2 years of study.

In 1954 a new drug application for the oral administration of diethylstilbestrol in beef cattle was allowed to become effective after the consideration of voluminous safety data submitted by Iowa State College (now University) and Eli Lilly & Co. The application included tissue-residue data which demonstrated that, under the conditions recommended for use, the beef tissue was free of diethylstilbestrol.

Since 1954 additional data demonstrating the absence of tissue residue have been published by Purdue University, the University of Missouri, Colorado A. & M. College (now University), and the U.S. Department of Health, Education, and Welfare.

Between 1954 and 1956 the FDA—after reviewing scientific data submitted by the American Cyanamid Co., Chas. Pfizer & Co., Inc., Dawes Laboratories, Inc., and Walnut Grove Products, Inc.—permitted additional new drug applications to become effective for the feeding of diethylstilbestrol to beef cattle.

In 1955 the FDA permitted the marketing of diethylstilbestrol pellets for implantation in the ear of beef cattle. Evidence submitted showed no detectable residues in the meat of treated animals.

In 1957 a new drug application was submitted providing for the oral administration of diethylstilbestrol in sheep. After examining the evidence, the FDA allowed this application to become effective.

Finally, in 1959, the FDA permitted the marketing of diethylstilbestrol pellets for implantation in the ear of sheep.

So far as is known, there is no new evidence that would cause the safety of diethylstilbestrol to be questioned. In fact, to the contrary, the acceptance and widespread use of this chemical continue to add to the evidence of its safety.

TISSUE RESIDUES

The problem of determining the existence and effect of residues in the human food supply is one that has received considerable attention. In view of the statement which is occasionally made that minute residues of diethylstilbestrol in animals used as human food could be unsafe, considerable emphasis has been placed on the detection of residual levels in slaughtered animals. In the following, publications reviewing the subject of residue levels will be quoted to show the safety of diethylstilbestrol when used as a feed supplement in cattle and sheep.

ASSAY PROCEDURES

In June 1954, Burroughs et al. submitted to the FDA, on behalf of Iowa State College, a master file covering oral feeding of diethylstilbestrol to beef cattle. This submission contained results from both chemical and biological assays for tissue residuals.

The chemical procedure was as described by Jones and Deatherage (1)—the final measurement depending upon a color development of diethylstilbestrol with antimony pentachloride. The sensitivity reported for this procedure was approximately one part per million. Since tests capable of greatly increased sensitivity are now available, this method is no longer used.

The bioassay used by the Iowa researchers was a slightly modified procedure of the uterine-weight technique described by Stob et al. (2). Basically, the difference consisted in the use of immature female mice rather than castrated mature female mice. The sensitivity reported was approximately three parts per billion.

Since 1954, many other researchers, including those from the FDA, have utilized the uterine-weight technique in their assay work (3–10). Due to the sensitivity and reliability of this procedure, it has met with wide acceptance. The sensitivity of the bioassay procedure is now two parts per billion.

In 1957 Mitchell (11) reported results on residual radioactivity when tritium-labeled diethylstilbestrol was fed to steers. The sensitivity was reported as low as 0.3 parts per billion.

The Lilly procedure is basically the uterine-weight technique. The method is essentially unchanged since 1955, the modifications being in design rather than procedure. These are as follows:

(*a*) The incorporation of vacuum-dried tissue, rather than wet tissue, in mouse diets.

(*b*) The use of 20 mice, rather than a fewer number, to establish a point on the control and assay curves—120 mice being required to assay one tissue.

(*c*) Calculations are essentially according to the methods described by Finney (12).

TISSUE RESIDUE LEVELS

In the new drug applications submitted for the uses of diethylstilbestrol in animals referred to on pages 3 and 4, ample evidence was included to demonstrate to both industry and the FDA that no detectable levels of diethylstilbestrol remain in the edible tissues of animals. Much additional evidence has been reported and will be abstracted here.

Burrows et al. (13), of Iowa State University, reported that edible and inedible cattle tissue revealed no detectable diethylstilbestrol levels when the hormone was fed over a long period of time and then discontinued 48 hours before slaughter.

Chas. Pfizer & Co., Inc. (14), reported no residue in its series of tests.

Turner (15), of the Missouri Agricultural Experiment Station, conducted an extensive survey on the tissues of animals. In animals fed 10 milligrams of diethylstilbestrol daily for 148 days and then slaughtered 44 hours after feed had been withdrawn, he found no residue in red meat, rib-eye, neck trimmings, tongue, liver, heart, spleen, brain, depot fat, blood, and various parts of the digestive tract. The kidneys and lungs showed traces present.

One of the most impressive experiments indicating diethylstilbestrol's safety and lack of residue was reported by Gossett, Smith & Downing (3). Steers were fed for 104 days on daily rations containing 10, 30, 50, 100, and 200 milligrams of diethylstilbestrol. Since the recommended feeding level is 10 milligrams per day, these animals, then, received the recommended level and 3, 5, 10, and 20 times that amount. Table I shows the tissue residue in beef slaughtered 48 hours after the last feeding of these doses.

TABLE I.—*Diethylstilbestrol tissue residue microgram/gram (dry weight) in steers*

Tissue	Feeding levels per animal per day				
	10 milligrams	30 milligrams	50 milligrams	100 milligrams	200 milligrams
Lean meat	0	0	0	0	0
Fat	0	0	0	0	0
Liver	0	0	0	0.0152	0.02216
Kidney	0	0	0	0.01372	0.01552
Tripe	0	0	0	0.0368	0.432

The table demonstrates that it is necessary to approach 10 times the recommended feeding level before residues appear in any tissues. Even at 20 times the recommended level there is no residue in the lean meat or fat.

Similar experiments were carried out on the same dosage schedule but with slaughter only 24 hours after feed removal. Here, at the recommended 10 milligram level no residue occurred in any organ but the liver (0.0059 micrograms, or 5.9 parts per billion), and even at the 200-milligram dose there was no detectable residue in the lean meat or fat.

Finally, the same dosages were given and the steers were slaughtered only 12 hours after feeding instead of the recommended 48 hours. Here, detectable residue appeared in the washed tripe, the kidneys, and the liver at the 10-milligram level. However, there were no detectable residues in the lean meat or fat at any dosage, even at the massive 200-milligram level.

In a study by Umberger et al. (16), of the U.S. Department of Health, Education, and Welfare, no added estrogen activity could be detected when steers

were fed at the recommended 10-milligram level, at three times the recommended level, and at six times the recommended level.

These experiments prove conclusively that tests sensitive enough to reveal residue in the amount of two parts per billion detect no residue in the edible portion of beef fed diethylstilbestrol at the recommended levels and under the recommended conditions.

The same type of data is available to demonstrate the safety of diethylstilbestrol when used in sheep. With sheep the recommended dosage is 2 milligrams per day.

Means, Chappel, and Downing (17) reported on an experiment in which lambs were fed 2.5, 4, and 7.5 milligrams of diethylstilbestrol daily for 86 days. When the animals were slaughtered 48 hours after being off diethylstilbestrol-containing feed, there was no detectable residue in the liver, kidneys, tripe, lean meat, and fat.

In the case of lambs, also, a critical experiment was run in which massive doses of diethylstilbestrol were used. Each lamb received 2.5, 4, 10, and 50 milligrams of diethylstilbestrol daily for 86 days.

The following results were obtained:

Lean meat: There was no residue in ewe lambs receiving 2.5, 4, and 10 milligrams per day. Residue appeared at the 50-milligram level. There was no residue in lean meat of wether carcasses at any level.

Liver: There was no residue in either ewe or wether lambs receiving 2.5, 4, and 10 milligrams. Residue appeared at the 50-milligram level.

Fat: In ewe carcasses there was no evidence of residue at levels of 2.5, 4, and 10 milligrams. Residue was present at the 50-milligram level. There was no residue in wether fat at any level.

Tripe: There was no residue in ewes at 2.5- and 4-milligram levels. Residue appeared at levels of 10 and 50 milligrams. Residue was present in wethers at 4, 10, and 50 milligrams.

Kidneys: There was no residue in ewes and wethers at levels of 2.5, 4, and 10 milligrams. Residue appeared at the 50-milligram level.

These results confirm the data collected in steers. It may be concluded that diethylstilbestrol is safe also for use in sheep.

The experiments in which diethylstilbestrol was fed in doses considerably larger than those recommended are of particular significance. They give an indication of the safety which exists at the recommended feeding levels for both sheep and cattle. The tests in which no residues could be detected even after enormous quantities of diethylstilbestrol were fed indicate a considerable margin of safety.

EXPERIMENTS WITH ANIMALS

Much, if not all, of the reason for the sometimes-expressed belief that diethylstilbestrol might be a carcinogen in human beings is based on work in animals.

The special conditions necessary to create cancer in animals should be pointed out. Only selected strains of the susceptible animals can be used, and even in these many of the tumors have no counterpart in human beings.

The only species in which carcinogenic activity for diethylstilbestrol has been reported are (*a*) Syrian hamsters, (*b*) guinea pigs, (*c*) a few strains of rats, and (*d*) a few strains of mice.

(*a*) Male Syrian hamsters treated with diethylstilbestrol devolp renal and pituitary tumors after prolonged exposure. The mechanism of the renal tumor's formation is a mystery, and any relationship to human neoplasia or to that of tumor formation in other species is yet to be explained.

(*b*) The guinea pig responds to diethylstilbestrol treatment in a unique manner—i.e., by the formation of myomata of the uterus. Myomata have been found elsewhere in the abdominal cavity and also in the thoracic cavity. The applicability of this to man is not certain.

(*c*) Some strains of rats develop mammary tumors when given diethylstilbestral, and others do not. Although the data are not available to confirm or refute it, there is suspicion that the incidence of induced tumors parallels that of spontaneous mammary tumors.

(*d*) Much work—in fact, most of the work—has been done with mice, and it has been possible to induce mammary tumors readily in male mice of strains having a high incidence of spontaneous mammary cancer in the females. In mouse strains with low susceptibility to cancer or in

the absence of the milk factor, mammary tumors are seldom obtained. The C3H mouse is apparently the most susceptible of all animals to the effect of diethylstilbestrol.

The effect of intermittent verus continuous exposure to estrogens was determined by Mühlbock (18). One group of gonadectomized C3H mice was treated continuously with an estrogenic hormone and a second group with double doses on an alternating schedule of 5 days on treatment and 5 days off. At 350 days, both groups had received the same total dose. With continuous treatment, the graph shows a tumor incidence of 5 percent at 150 days and 100 percent at 350 days; with intermittent treatment, the tumor incidence was 5 percent at 235 days and 21 percent at 350 days.

Mühlbock comments:

"This experiment shows as other [sic] do that only a continuous treatment with hormones will lead to the induction of cancer * * *. It is not possible to induce cancer with one single hormone dosis [sic] nor is the carcinogenic effect of hormones irreversible before tumor [sic] formation actually occurs."

It has been shown that diethylstilbestrol can induce cancer only in special strains of certain laboratory animals and under special conditions. The species in which negative results were obtained should also be noted, because the fact that most species of animals do not develop cancer from diethylstilbestrol is also significant. Attempts have been made without success to cause cancer by the use of diethylstilbestrol in the following animals: most strains of rats; most strains of mice; monkeys; dogs; cats; goats; rabbits; pigs; and fowl—for example, white leghorn, Rhode Island Red, barred Rock, Egyptian racer, Hyline, turkey, and ring-necked pheasant.

EXPERIENCE WITH DIETHYLSTILBESTROL IN HUMAN BEINGS

The results of the clinical experience with diethylstilbestrol are believed to be particularly pertinent to this discussion. Here, the question is the direct application of the drug to human subjects—it is not necessary to postulate that they receive it through the intermediate of an animal used as food.

Diethylstilbestrol has been used in human medicines for about 20 years. As mentioned previously, in 1941 the pharmaceutical industry presented to the FDA the results of several years of study. To give some indication of this material's actual use clinically, several of these studies (19–24) will be abstracted here.

The dose of diethylstilbestrol used in various studies should be noted particularly. In one study, a group of women received daily a quantity of diethylstilbestrol that would be equivalent to 1 billion times the amount that would be present in one pound of meat if it were assumed that diethylstilbestrol had been misused to such an extent that a theoretical residue of 0.3 part per billion could be detected in the meat.

White and Hunt (19) reported in 1943 the treatment of 125 cases of threatened toxemia of pregnancy in diabetic women. The treatment included the administration of diethylstilbestrol in daily oral doses ranging from 40 milligrams to 120 milligrams for periods of 7 months. They concluded that the treatment was beneficial and that there were no harmful or toxic effects of any kind. Subsequent results have confirmed these conclusions.

In 1955 distinguished members of the Medical Research Council (20), of England, acting as a Conference on Diabetes and Pregnancy, set up a full-scale experiment to duplicate that of White and Hunt. In this experiment, the course of treatment of diabetic, pregnant women was 50 milligrams of diethylstilbestrol per day up to the 19th week; 100 milligrams per day from the 20th to the 27th week; 150 milligrams per day from the 28th to the 31st week; and 200 milligrams per day until delivery.

Smith et al. (21) reported in 1946 the treatment of women for toxemia of pregnancy and other conditions. They used a daily dose of 30 milligrams to 125 milligrams of diethylstilbestrol by mouth. The authors conclude. "The results to date are promising, and there has been no evidence of harmful effects."

Karnaky (22) gave relatively large doses of diethylstilbestrol both by mouth and by injection. He treated 10 cases of threatened abortion and 76 cases of complete or incomplete abortion with daily doses ranging up to 100 milligrams or more by mouth. He found no harmful effects.

Abarbanel (23) confirmed Karnaky's original contention. He states, "Pregnant patients tolerate these doses of diethylstilbestrol easily with no side

effects." The total dose for the treatment of threatened abortion may exceed 100 milligrams per day.

About 3 years after diethylstilbestrol's introduction Karnaky (24) published another paper on his experiences with this drug. This study was divided into several different parts.

Eighty-six children from 2 to 12 years of age received from 1 milligram to 5 milligrams of diethylstilbestrol daily. In addition, eight girls ranging in age from 2 to 8 years received from 10 milligrams to 25 milligrams of diethylstilbestrol daily or every second day for periods of from 1 to 8 months.

In another series of normal children of the same ages, roentgenograms were taken before, during, and following the administration of diethylstilbestrol. In this and in a control series, no significant changes in ossification were disclosed. Laboratory tests also failed to demonstrate any abnormal conditions.

In a selected cumulative series of 136 women given diethylstilbestrol for various gynecological conditions, the dose was gradually increased from 1 milligram to 5 milligrams by mouth every 3 to 7 days until some were taking 100 milligrams each per day. Furthermore, at the Endocrine Injection Clinic they received intramuscularly, once or twice weekly, doses of from 25 milligrams to 250 milligrams of diethylstilbestrol incorporated in olive oil in a concentration of 25 milligrams per cubic centimeter. Regardless of the amounts administered, there were no demonstrated harmful effects on the patient. They were then continued on a dose of 100 milligrams per day with additional intramuscular injections of from 50 milligrams to 100 milligrams two to six times weekly. In none of these cases was it possible to demonstrate any abnormal findings resulting from diethylstilbestrol therapy.

Two other patients were given 950 milligrams of diethylstilbestrol weekly for an average period of 19 weeks, a total of 18,000 milligrams.

In another series of 31 patients, each patient received 100 milligrams of diethylstilbestrol daily from the third month of pregnancy to term, a total of 18,000 milligrams.

Between December of 1939 and 1943, Karnaky used diethylstilbestrol in 3,227 patients. The final statement of his paper says: "Diethylstilbestrol may be used without fear of serious consequences. It is a valuable drug."

It is estimated that at present there are about 300,000 women in the United States taking diethylstilbestrol for a number of different conditions in which it is a valuable means of therapy. The normal dose of diethylstilbestrol in women is 0.5–5 milligrams daily, with the dosage period ranging up to years. Any undetectable amounts of diethylstilbestrol ingested through the consumption of meat from animals fed a diethylstilbestrol-containing feed supplement would be totally insignificant when related to these normal therapeutic dosage levels.

To try to assess any possible relationship between diethylstilbestrol—or, more generally, estrogens—and cancer in women, a literature search of cancer cases associated with estrogen therapy was carried out, and the following analysis was made:

Auchincloss and Haagensen (25) reported one woman in whom carcinoma of the breast followed the administration of 79,067 units of estradiol benzoate.

Parsons and McCall (26) reported another single case of carcinoma of the breast in a 54-year-old woman who had received an estimated total of 200,000 units of theelin.

During the past 20 years diethylstilbestrol and other estrogenic agents have been used extensively in a variety of conditions, including the menopause syndrome, osteoporosis, suppression of lactation, carcinoma of the prostate, and in selected cases of carcinoma of the breast. As Novak (27) has stated, it would not be surprising to find occasionally the coexistence of estrogen use and adenocarcinoma of the endometrium, and yet very few cases have been published reporting this. Novak reported one case and reviewed the total cases in 1951. He indicated that some of these cases might be considered pathologically as either proliferative hyperplasia, suspicious of early malignancy, or strongly suggestive of adenocarcinoma.

A review of these individual cases reveals that Fremont-Smith et al. (28) report one case in which menopausal symptoms were treated over an 8-year period with a total of 392 milligrams of estradiol as benzoate or dipropionate, 1,085 milligrams of estrone sulfate, and 18 milligrams of diethylstilbestrol. Pathologic examination of the uterus after removal showed adenocarcinoma grade II. These authors conclude that the "evidence cited does not prove but strongly suggests that the unopposed action of estrogens on the breast and endometrium of certain women may result in the development of cancer."

Vas (29) reported two cases receiving prolonged estrogen therapy which later had carcinoma of the uterus. One patient over a 10-year period received 15 million units of theelin, 600 milligrams of progynon, and 50 milligrams of diethylstilbestrol. This patient underwent a hysterectomy, and the pathologic diagnosis was malignant adenoma of the uterine fundus. The second patient received an unknown estrogenic preparation. Later 120,000 units of theelin and 140 milligrams of progesterone were given. This patient had a laparotomy which revealed a malignant adenoma of the uterine fundus. Also, theca-cell tumors of both ovaries were found, and it is believed by many that the latter condition predisposes to uterine carcinoma.

Gusberg (30) studied five patients who developed adenocarcinoma of the corpus uteri following prolonged estrogenic administration. This author admitted that it was impossible to achieve proper controls in such a clinical investigation and, therefore, that the relationship between medication and the neoplasm in any individual case could not be established. In three cases, diethylstilbestrol was used, but in the other two cases the estrogenic therapy was not specified.

Speert (31) reported that 7 in a series of 56 cases of carcinoma of the uterine fundus gave a history of receiving estrogenic therapy for varying periods shortly before or immediately preceding admission. One case may have been proliferative hyperplasia of the endometrium due to esterogen. Only one of these seven cases had received diethylstilbestrol, and this was in a dosage of 0.5–2 milligrams up to four times weekly for 5 years.

According to Larson (32), Speert believed this report suggested a carcinogenic action of estrogen if it could be shown "that less than 12.5 percent of the female population of this age group (51–67)[1] is under prolonged estrogen administration." Larson states that there is no evidence for this belief, and even if true it would not be applicable, since Speert's statistics came from a selected group and, therefore, were not to be compared with the general population.

Kimbrough and Muckle (33) state that two of their patients with carcinoma of the uterus had long-continued estrogenic therapy. This was a report of 95 cases studied.

In 1954 Jensen et al. (34) reviewed 105 cases of cancer of the corpus uteri and found that 16 cases had received estrogens in varying amounts. Fifty-two patients in a control group, who had passed the menopause, had also received estrogenic therapy in 21.1 percent of the cases. Again, indicated with this group was the difficulty of making the histologic diagnosis in patients receiving estrogenic therapy.

Larson (32), in a comprehensive review, reports that coincidental occurrence of endometrial carcinoma while a patient is receiving estrogens must be expected on the basis of chance, since innumerable postmenopausal women are given estrogens at an age when the incidence of endometrial carcinoma is fairly high. He points out that the great weakness of reports on such occurrences is that there is no control series, making it impossible to compare the incidence of carcinoma in those women receiving estrogens with the incidence in those not getting the hormone. He also refers to a report of the American Medical Association's committee on therapeutic trials in which well over 1,000 women with inoperable breast carcinoma failed to develop any genital carcinomas after 3 months to 2 years of massive estrogen treatment.

There are a few isolated cases in which carcinoma of the female and male breast has been reported in association with estrogenic therapy.

A review of these reports indicates that there is no clear-cut association between cancer and diethylstilbestrol or other estrogen therapy. Actually, these reports are rather limited in number, considering the extensive use of these drugs.

Allaben and Owen (35) reported one case of carcinoma of the breast in a 50-year-old woman who had received 258,000 units of estrogen during the previous year.

Frazier (36), after reviewing the literature and after considerable personal experience, recommends continuous estrogen therapy for life after the menopause. He concludes, in a report published in December 1959, that there is no danger of cancer resulting from this treatment.

An article (37) from the Department of Medicine of the Massachusetts General Hospital and the Harvard Medical School appeared in the Journal of the

[1] Ages—not reference numbers.

American Medical Association for November 21, 1959. It reviews 292 postmenopausal women who had been on prolonged estrogen therapy from periods of 4 to as long as 25 years and draws the conclusion that there is "no justification for the fear that mammary and cervical carcinoma may result from this therapy."

In the Journal for December 26, 1959, appeared a report on long-term estrogen therapy continuing from 1 to 8 years in a series of both men and women under treatment for osteoporosis. This report (38) is from the Cornell University Medical College. The following statement is made by the authors:

"No cases of cancer have occurred, nor are we impressed that the often-quoted relationship between the use of sex hormones and the production of cancer is actually substantiated by any valid clinical evidence in human beings."

And finally, in considering the possible danger of estrogens to women, the comments of Larson (32) are most appropriate. In 1954, Larson published an extensive review from the Northwestern University Medical School on estrogens and endometrial carcinoma. The discussion of that article is quoted in part, as follows:

"There is a great tendency in clinical investigation to fit facts to preconceived theories. A combination of small series, complex problems, and histologic and hospital biases enhance [sic] this difficulty. This review has attempted to assemble a large body of facts and use them objectively.

"Certainly enough evidence has accumulated to indicate that any correlation between estrogens, endometrial carcinoma, delayed menopause, myomas, squamous metaplasia of the cervix, and cirrhosis are most probably mythical.

"Certain other avenues of approach; namely, animal experiments, and the relationship between endometrial carcinoma in the human to 'swiss cheese' hyperplasia, estrogen therapy, breast carcinoma, and castration have not yielded any convincing evidence to support the view that estrogens cause endometrial carcinoma. The associations between them can be explained easily by chance, and, indeed, in some instances, there is evidence to indicate that there is no relationship, for example, the development of endometrial carcinoma in castrates, and atrophic endometrium associated with corpus cancer. * * *

"The author feels that there is but meager evidence to implicate estrogens in the etiology of endometrial carcinoma."

It is generally agreed that the incidence of mammary or uterine carcinoma in diethylstilbestrol-treated women is no greater than in the general public. In other words, there is no way of knowing that a woman who develops mammary or uterine carcinoma (and the number is very small) while being treated with diethylstilbestrol would not suffer from the same condition whether or not she was receiving the hormone, since there is no statistical difference in the incidence of those treated and those untreated. Therefore, it must be presumed that no definite etiologic role can be attributed to estrogenic agents in carcinoma.

It has been suggested that diethylstilbestrol could cause mammary cancer in men. One way to test the validity of such a suggestion would be to show whether or not men treated with large doses of diethylstilbestrol would develop mammary cancer. However, only 12 mammary cases have been reported in the literature, and all 12 were coincidental with prostatic cancer. In such coincidental cases there are three possibilities:

(*a*) The mammary tumor (or tumors) is an unrelated primary mammary tumor that would have developed in the absence of diesthylstilbestrol treatment. Hertz (39) cites an instance of primary mammary carcinoma in a man with prostatic carcinoma who had not received diethylstilbestrol. There is no reason for thinking this case is unique.

(*b*) The mammary tumor (or tumors) is metastatic from the prostate.

(*c*) The mammary tumor (or tumors) is primary in the breast and results from diethylstilbestrol treatment.

Dr. Paul N. Harris, of Eli Lilly & Co., a pathologist with 23 years of experience specializing in the field of cancer, has analyzed the literature cases referred to above. His brief analysis of these cases, along with references, will be found in the appendix on pages 30–31. His report on these cases follows:

"Attached are summaries of 10 reports of breast tumors in men with prostatic carcinoma treated with diethylstilbestrol and 1 with bladder carcinoma also given diethylstilbestrol. I found titles of two other papers (40, 41) in journals not included in our library.

"There is only one report in which it is possible to say with certainty that the mammary tumors were primary or metastatic (see case E) because it is the only case in which the acid-phosphatase reaction was done. That case was

metastatic. On the basis of appearance in routine sections, it seems probable that cases A, C, F, and G were primary in the breast. In cases B and D the pathologists who saw the sections did not agree on the primary, but in both instances prominent pathologists voted for metastasis from the prostate. In cases H, I, and J the tumors were considered metastatic from the prostate.

"I wish to call attention to case I because of the tabulation of reported cases and also the author's citing several instances of occurrence of mammary and prostatic carcinoma in the absence of estrogen treatment. Case K is an example of breast carcinoma at first thought to be primary but finally decided to be metastatic from the bladder."

It can be estimated that the total number of men in the United States being treated with diethylstilbestrol is about 50,000, 30,000 of whom are under treatment for prostatic cancer. It is evident that estrogen treatment cannot be an important cause of mammary cancer in men because:

(*a*) At least 50,000 men per year are taking diethylstilbestrol in doses of milligrams per day,

(*b*) The incidence of mammary cancer in this group is no higher than in the general male population, and

(*c*) Only 12 cases of breast cancer in males taking diethylstilbestrol have been reported, and these have not been directly related to the therapy.

The foregoing has demonstrated that there are many examples of human patients who have tolerated as much as 150 milligrams of diethylstilbestrol per day with no ill effects. Considering such data, it seems unrealistic to be concerned with possible effects from undetectable amounts of estrogen residue in the meat from animals fed diethylstilbestrol.

NATURALLY OCCURRING ESTROGENS

Diethylstilbestrol, while chemically different from naturally occurring estrogens, has the same physiological effects on organisms. Since this is the case, a review of naturally occurring estrogens is indicated here.

Many common foods normally contain estrogens. For example, the average estrogen content of dried milk is from 5 to 8 parts per billion; honey from 4 to 60 parts; hen's eggs, from 1,500 to 2,000 parts (42). Naturally occurring estrogens have also been found (43) in lobsters, beets, and potatoes.

The estrogen content (44) of 50 varieties of alfalfa ranges from zero to 27 micrograms per pound (zero to 50 parts per billion). There is also an appreciable amount of estrogens in green, leafy vegetables and forage, such as lettuce, soybeans, corn, and their byproducts.

The natural estrogen content of the fat of steers which have had no access to diethylstilbestrol may be more than four parts per billion. The average estrogen content of the liver and kidneys of steers which have received no diethylstilbestrol runs higher than one part per billion and, more importantly, that of lean meat ranges from 0.7 to 1.2 parts per billion.

The estrogens ingested through food, however, are only a small part of the total estrogen content of the body. It should be pointed out that both men and women synthesize large amounts of estrogen each day. For example, Gallagher et al. (45, 46) have shown that each day men excrete in the urine estrogens equivalent to 9–12 microgram of estrone while women average 18–27 microgram. This, of course, is only a small part of the total estrogens formed.

A HYPOTHETICAL CASE

To try to put some of the experimental facts that have been previously presented in this report into some reasonable perspective for purposes of discussion, it might be worthwhile to consider the implications of the experimental facts when concerned with diethylstilbestrol's safety.

It has already been demonstrated that there is no detectable residue in beef from cattle fed diethylstilbestrol under the recommended conditions. However, to make any discussion or comparison possible, and to make an example real, it is necessary to use some finite quantity of residue obtained under unusual circumstances not at all related to the recommended use of diethylstilbestrol. For this purpose the Mitchell experiment will be used.

Mitchell et al. (47) fed an 800-pound yearling Hereford steer 10 milligrams of tritium-labeled diethylstilbestrol over an 11-day period and then slaughtered the animal 27 hours after the last feeding (21 hours earlier than the time recommended for slaughter). The amount of diethylstilbestrol detected in various tissues is shown in table II.

TABLE II.—*Diethylstilbestrol residue*

Tissue	*Parts per billion*
Lean meat	0.30
Internal fat	.35
Liver	9.12
Kidneys	4.15
Heart	0
Blood	0

Compare the figures in table II with the concentrations of naturally occurring estrogens in our commonly accepted foods. In some foods the content of these naturally occurring estrogens is more than 10 times as great as that obtained from diethylstilbestrol even under the conditions of the Mitchell experiment. The estrogen content of lean meat from cattle fed no diethylstilbestrol has been shown to be from 0.7 to 1.2 parts per billion—more than two to four times higher than the residue levels shown by Mitchell. In one 20-gram egg there is 20 to 30 times as much estrogen present as could be obtained from the diethylstilbestrol in 1 pound of lean meat from the animal described in the Mitchell experiment.

In view of the high natural estrogen content of certain foods that are eaten daily throughout a lifetime, concern over the diethylstilbestrol content of meat from even the steer in the Mitchell study seems somewhat groundless.

To continue with a practical analysis of the data obtained, it would be appropriate to consider how much beef would be required to obtain the amount of diethylstilbestrol represented in one therapeutic dose. A therapeutic dose of 1 milligram per day will be assumed (it has been shown previously that many individuals have received more than 100 milligrams of diethylstilbestrol per day). It will also be assumed that the concentration of residual diethylstilbestrol in the meat would be the same as that in table II (again remembering that the Mitchell experiment was performed under unusual circumstances). The amount of meat that an individual would have to eat daily to obtain this 1-milligram level is calculated in table III.

TABLE III.—*Daily consumption of beef tissue to obtain 1 milligram of diethylstilbestrol*

Tissue	*Pounds*
Lean meat	7,300
Internal fat	6,200
Liver	240
Kidneys	530
Heart	(1)
Blood	(1)

[1] Infinity.

The average person eats less than one-quarter of a pound of beef per day, based on estimates that the average annual rate of beef consumption in the United States is 83 pounds per person.

DISCUSSION

The various sections of this report have presented the experimental facts, as they are known, about diethylstilbestrol. It is submitted that sufficient evidence has been presented to prove the safety of diethylsilbestrol and, further, to demonstrate the conservatism of the recommendations that are made for its use.

A review of the clinical use of diethylstilbestrol in human medication indicates no clear-cut association between cancer and this or other estrogenic therapy. There are many examples of human beings who have received as much as 150 milligrams per day over extended periods of time.

The basis for believing that diethylstilbestrol might be carcinogenic in human beings, then, is based on work in animals. There are special conditions necessary for the production of tumors in animals, and even then many of the tumors produced have no counterpart in human beings.

Only under exaggerated conditions is it possible to show residue in the tissue of cattle fed diethylstilbestrol. To demonstrate the safety of this use of the chemical, experiments in which 20 times the recommended level was fed failed to produce any detectable residue in the lean meat or fat. Assay methods accurate to two parts per billion were used in the evaluation.

Through the ingestion of many common foods that contain estrogens or estrogenlike substances and the daily synthesis of these compounds within the human body, the normal estrogenic level in men and women is appreciable. Assuming that the residue shown in the Mitchell experiment were representative of all beef (which is impossible to imagine), at the average normal rate of consumption it would take a man approximately 88 years to eat enough lean beef to equal one assumed therapeutic dose (1 milligram) of diethylstilbestrol.

Finally, comment on three critical reviews on the diethylstilbestrol situation is pertinent.

In 1956 a symposium on medicated feeds (48) was sponsored by the Department of Health, Education, and Welfare, Food and Drug Administration, Veterinary Medical Branch. At this symposium the use of diethylstilbestrol in feeds was discussed at great length. Dr. Holland, then medical director of the FDA, in summarizing the discussion and the status of diethylstilbestrol, made this statement:

"I think we have had an excellent example of the kind of complex and extremely important problems that a technical agency, a scientific agency, like the Food and Drug Administration must face frequently.

"Our position, I think, is very clear. All of the data, all of the work, all of the literature we have had occasion to study and review over a period of many, many months preponderantly led to the conclusion that diethylstilbestrol as proposed for use in cattle feed was perfectly safe."

The second critical review was made in 1957 by the Council on Foods and Nutrition of the American Medical Association, with the cosponsorship of the Nutrition Foundation, Inc. The report was submitted by Dr. George M. Briggs and was presented from the Laboratory of Nutrition and Endocrinology, National Institutes of Health, Public Health Service, U.S. Department of Health, Education, and Welfare (49). The council reviews all of the information on diethylstilbestrol. The conclusion is as follows:

"Meat produced from these animals contains a negligible amount of estrogen activity, supplying from 0 to 1 gamma of estrogen per day in the human diet. This amount presents no hazard to man, since it is considerably less than that normally present in the body and much less than the therapeutic dose. The amount of estrogenic activity is no greater than that in an ordinary diet containing milk, leafy vegetables, cereals, and meat or organs from untreated animals."

Thirdly, in 1959 Umberger et al. (16), of the U.S. Department of Health, Education, and Welfare, published an article in the Journal of Animal Science demonstrating that no estrogenic residues were detected in the edible tissues of steers fed six times the recommended level of diethylstilbestrol. The summary of the article states:

"No added estrogenic activity could be detected in the edible tissues of steers fed 10, 30, and 60 milligrams of stilbestrol per steer per day for 90 to 180 days when the stilbestrol was removed from the feed 48 hours before slaughter. The method used was capable of detecting 2 parts per billion in stilbestrol equivalents in every case, and often as low as 0.5 parts per billion. The failure to detect estrogenic residues in the edible tissues of one steer fed at the rate of 30 milligrams per day and another at the rate of 60 milligrams per day, when the feed was removed 48 hours before slaughter, provides a safety factor for the possible misuse of the products."

It is submitted that scientific evidence proves that diethylstilbestrol is a safe and valuable drug when used for the purposes intended and as recommended.

APPENDIX

THE HARRIS REPORT OF COINCIDENTAL DIETHYLSTILBESTROL CANCER OCCURRENCE IN MEN

Case A (50)

In this case it is probable that the tumor in one breast was primary carcinoma. The nature of the other breast can only be guessed at but was almost certainly primary carcinoma, too. It is possible that the mammary tumors would have developed even had diethylstilbestrol not been given.

Case B (51)

This is a difficult case to assess. The opinion of Colonel Ash is not to be cast aside lightly (Colonel Ash considered the tumor metastatic, probably from the

prostate). However, both breasts were nodular, and only one sample of tissue was available for study; it was not possible to compare it with the prostatic tumor.

Case C (52)

It is evident that the authors consider the breast tumors to be primary rather than metastatic. No relationship to diethylstilbestrol treatment is postulated. They say merely that the patient developed bilateral carcinoma of the breast coincident with prolonged diethylstilbestrol therapy (120 milligrams over 40 months).

Case D (53)

The histologic evidence that the mammary tumors were metastatic is suggestive but not incontrovertible.

Case E (54)

This is the only case reported in which proper studies were made to permit incontrovertible classification of the mammary tumors. This case was metastatic.

Case F (55)

This is probably a primary breast cancer.

Case G (56)

Metastatic carcinoma from the prostate could not be definitely excluded.

Case H (57)

At necropsy a small-cell carcinoma of the prostate was found with metastases to both breasts. Primary and secondary tumors had the same histologic structure.

Case I (58)

Original author considers the breast tumors metastatic from the prostate.

Case J (59)

At necropsy widespread metastases of the prostate carcinoma were found, including metastases to both breasts. The histologic appearance of the metastases was identical with that of the prostatic tumor.

Case K (60)

This is a case of bladder (not prostate) tumor treated with diethylstilbestrol. The authors say: "On the basis of a single case it is not possible for one to evaluate fully the carcinogenic effect of estrogens on male breast tissue. The fact remains, however, that in this instance the breast malignancies were bilateral new growths, histologically different from the primary neoplasm; also there was no breast disease noted prior to the administration of estrogens."

In the same volume is a note by McClure (61) stating that at necropsy the tumors in the bladder and in the breast were indistinguishable histologically: "It is impossible, therefore, to conclude that there was a positive relationship between estrogen therapy and the breast tumors, despite the strongly suggestive evidence at the time of biopsy."

PHARMACEUTICAL MANUFACTURERS ASSOCIATION COMMITTEE FOR THE STUDY OF CARCINOGENIC SUBSTANCES

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Dr. George H. Schneller, Wyeth Laboratories.
Dr. Max Tishler, Merck Sharp & Dohme.
Dr. Ernest M. Weber, Chas. Pfizer & Co., Inc.
Dr. William F. Wenner, the Upjohn Co.
Dr. James H. Williams, Lederle Laboratories.

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The CHAIRMAN. Did I understand you to say if excessive amounts of salt, as an example, were used, there would be an adverse effect to animal life?

Dr. CARNEY. I did not use the example of salt, but tumors have been produced by injecting sugar. It has been produced by the oral ingestion of tannic acid, which is present in high quantities in coffee and tea. Milk and cream have been shown to produce cancer. All of these materials which have estrogens—stilbestrol is an estrogen, and presumably it causes cancer in animals because it is an estrogen.

The CHAIRMAN. Can you tell me what an estrogen is?

Dr. CARNEY. It is a female sex hormone, and you find this in——

The CHAIRMAN. Now, I know exactly what it is. [Laughter.]

Dr. CARNEY. But we have these things in our everyday food in quantities thousands of times as great as you would get even with a contaminated piece of meat with stilbestrol. This is one of the inconsistencies of this thing.

The CHAIRMAN. Thank you very much.

It has been very helpful to me. I appreciate the benefit of your testimony.

Dr. CARNEY. Thank you, gentlemen. I appreciate it.

The CHAIRMAN. The committee will now recess until 1:45, at which time Mr. Williams will be the first witness.

(Whereupon, at 12:40 p.m., the committee recessed until 1:45 p.m.)

AFTERNOON SESSION

The CHAIRMAN. The committee will come to order.

The first witness this afternoon will be Mr. Edward Brown Williams.

I might say to my colleagues that I have been looking forward to this opportunity now for a long time, for Mr. Williams to appear before this committee.

I had the great pleasure and privilege of attending the same college with Mr. Williams, although I am sure everyone can readily see that I do not look as old as he looks. [Laughter.]

But it is a pleasure for me to welcome an almost lifelong friend and a college classmate after all these years.

He comes from an outstanding family in Arkadelphia, Ark. The trouble about him is that he left down there where he got a very good education, and came up east where he had to get into the education business around Harvard, I think they call it.

But anyway, seriously, Ed, it is a pleasure to welcome you to this committee.

Mr. WILLIAMS. Thank you, Mr. Chairman.

The CHAIRMAN. I have observed your progress since the days that I mentioned, and I am very proud of it, and I know your testimony on this highly important and technical problem will be very beneficial to the committee.

STATEMENT OF EDWARD BROWN WILLIAMS, ATTORNEY, ON BEHALF OF PHARMACEUTICAL MANUFACTURERS' ASSOCIATION

Mr. WILLIAMS. Thank you, Mr. Chairman.

I would like to state for the record that I did not write your statement. [Laughter.]

Mr. Younger and Mr. Chairman, I am grateful for the opportunity to present to the committee the position of the drug industry on an important provision of H.R. 7624.

The comments which I shall offer are concerned with that section of the bill already referred to by Mr. Worley, and discussed by Dr. Carney, relating to the use of color additives which are found to induce cancer.

This provision establishes standards for dealing with additives which will be ingested as well as those which are not for ingestion. If an additive "is found to induce cancer when ingested by man or animal" it would be deemed unsafe and could not be listed for use in foods, drugs, or cosmetics. This statement deals primarily with the part of the cancer provision which I have quoted.

This portion of the provision was taken without change from the cancer proviso in section 409(c)(3)(A) of the food additives amendment—the so-called Delaney clause. As it appears in that amendment, the provision has been interpreted by the Department of Health, Education, and Welfare as an absolute prohibition of the use of any food additive which is found to induce cancer when ingested by man or animal, without regard to the conditions of use resulting in the induction of cancer, such as the amount ingested, the length of the period during which the additive was ingested, or the species, or strain of species, of animal used in testing the additive.

The Department has made clear that this construction will also be applied to the pertinent provision of H.R. 7624.

The testimony which you have heard from Dr. Carney has dealt with the approach of the Department from the medical and scientific standpoint. My comments will consider other aspects of the problem created by the cancer clause and the Department's construction of it.

THE ADOPTION BY CONGRESS OF THE DELANEY CLAUSE

It is useful to an understanding of the problem to review briefly the manner in which the Delaney clause became a part of the food additives amendment, since its presence in that amendment is the precedent upon which the similar provision of H.R. 7624 is based.

This clause was not included in the food additive bill (H.R. 13254) as it was reported unanimously by this committee on July 28, 1958. The clause was inserted as a committee amendment at the instance of Mr. Delaney, after the bill had been reported to the House. There were no hearings on the provision, either in the House or the Senate. These hearings afford to industry its first opportunity, therefore, to state its views to a committee of Congress upon this critical matter.

Mr. Delaney had taken up with the Department the question of including in the food additives bill a specific provision concerning cancer. In a letter to the chairman of the committee, dated August 8, 1958, Assistant Secretary Richardson wrote that the bill as reported by the committee, without the Delaney clause, would prevent the use in food of any substance that might produce cancer in man and would afford good, strong public health protection. He further wrote:

> To single out one class of diseases for special mention would be anomalous and could be misinterpreted. Hence, in drafting the Department's bill we chose general language that would restrain any use of an additive that would have any adverse effect on the public health. This approach has been followed in H.R. 13254.

Mr. Richardson then stated, despite the views he had expressed, that the Department would not object to appropriate mention of cancer in the proposed legislation, but that—and I quote again:

> * * * the language suggested by some to bar carcinogenic additives would, if read literally, forbid the approval for use in food of any substance that causes any type of cancer in any test animal by any route or administration. This could lead to undesirable results which obviously were not intended by those who suggested the language.

As examples, he cited concentrated sugar solution, lard, certain edible ingestible oils and even cold water as having been reported as causing cancer at the site of repeated injections with a hypodermic needle.

The apprehension of the Assistant Secretary that language specifically mentioning cancer could be misinterpreted has proved to be justified by the results of the administrative construction placed upon the Delaney clause, as will hereafter be shown.

Mr. Richardson concluded his letter to Chairman Harris by suggesting that "if there is still a desire to make specific mention of cancer in the bill" the following language should be employed:

> No additive shall be deemed to be safe if it is found to induce cancer when ingested by man or animal, or if it is found, after tests which are appropriate for the evaluation of the safety of food additives, to induce cancer in animals.

This is essentially the language of the Delaney clause as adopted by Congress, except that the last phrase which I quoted—"To induce cancer in animals"—was changed to read "to induce cancer in man or animal."

The first portion of the quoted language, which would prohibit the use of additives "found to induce cancer when ingested by man or

animal" is, as I have stated, the principal subject of these comments. The same language has been included in the color additives bill before this Committee.

The term "additive" is not used in the food additives amendment in its simple grammatical sense of something added. Its meaning is stated in section 201(s) of the Federal Food, Drug, and Cosmetic Act as added by the amendment.

That section defines the term "food additive" to mean any substance intended for use in food which is not generally recognized by qualified experts "to be safe under the conditions of its intended use."

"Conditions of use" are, therefore, an essential factor in the test of safety established for the purpose of determining whether a substance is an additive. It is evident that the term "additive" as used in the Delaney clause and in other provisions of the statute, means "food additive" as defined in section 201(s).

Section 409(b)(1) provides that any person may file with the Secretary a petition proposing the issuance of a regulation "prescribing the conditions under which" a particular additive may be used. Paragraph 2(B) of the same section requires, among other things, that the petition contain a "statement of the conditions of the proposed use of such additive."

Paragraphs 2(C) and (D) require specific information as to the quantity of the additive. Quantity is a condition of use.

Subsection (c) of section 409 provides for a regulation prescribing "the conditions under which an additive may be safely used," specifically including quantity and manner of use.

Subsection (c)(3) sets forth the circumstances under which a petition shall be denied, among which are failure to establish that the proposed use, "under the conditions of use to be specified in the regulation, will be safe." The Delaney clause follows.

These references reveals the fundamental and pervasive emphasis of the food additives amendment upon conditions of use of additives as essential statuatory criteria to be applied in the determination of their safety. This emphasis was not accidental. It was the result of a concerted effort by industry and the Department of Health, Education, and Welfare to overcome the now familiar per se doctrine of construction of certain provisions of the Food, Drug, and Cosmetic Act.

Under the doctrine the Food and Drug Administration maintained that it was without authority to establish tolerance levels for use in foods of most so-called poisonous or deleterious substances, regardless of whether such substances were harmless under the conditions and in the amounts which they were actually used.

A similar problem exists even today in the case of coal tar colors in foods, drugs, and cosmetics, since it is the position of the Department that, unless it finds a color harmless when fed to test animals at very high levels, its use is prohibited, without regard to its safety or lower levels.

The Department was upheld by the Supreme Court of the United States in its position that it cannot establish tolerances for coal tar colors which are toxic in high concentrations, although they may be safe at use levels. *Flemming* v. *Florida Citrus Exchange*, 358 U.S. 153 (1958).

This was an intolerable situation and was recognized as such by FDA and regulated industry, since it was conceded that many of such substances, although toxic at high levels of concentrations, could safely be used at the levels at which they were needed and employed by industry. The per se doctrine is unscientific and impractical and reliance upon it is unnecessary to assure the safety of food or color additives.

The matter was fully explored in the hearings before this committee on the food additives bill. The testimony of both Government and industry witnesses on the bill agreed that the outmoded per se doctrine must be scrapped.

This was done. The background which has been outlined explains the insistent stress of the food additives amendment, illustrated above, upon conditions of use of additives as the primary standard of reference for the determination of their safety by the Food and Drug Administration.

The assiduously laid plans of Government and industry were overturned in an important zone of their intended operation by the last-minute insertion in the food additives bill of the Delaney clause, which has been interpreted, as I have said, by the Department as a prohibition of the use of any additive found to induce cancer in animals, without regard to the amounts or other conditions in which it is used.

This return to the old per se doctrine in a critical food additives area was accomplished without the benefit of the light which could have been thrown upon the matter by the interchange of opinion and information afforded by hearings before a committee of Congress. It is hardly surprising that, under the circumstances, many of us are bewildered by the turn of events.

A like reversion to the per se doctrine would occur in the field of coal tar colors if the cancer clause in its present form were to remain in H.R. 7624.

The provisions of the food additives amendment above outlined, which establish the conditions of use of an additive as the pivotal factor to be weighed in determining its safety, clearly point up the anomalous position occupied by the Delaney clause as construed by the Department.

Other provisions of the amendment emphasize the anomaly. Sections 201(s) (1) and (2) of the food additives amendment expressly exclude from the amendment pesticide chemicals in or on raw agricultural commodities (which are regulated under the pesticide chemicals amendment; section 408 of the act), as well as substances used in accordance with a sanction or approval obtained prior to the enactment of the food additives amendment, under the Food, Drug and Cosmetic Act (the so-called grandfather clause).

These provisions seem quite inconsistent with the per se construction of the cancer clause adopted by the Department.

There would be no more hazard from a substance newly proposed for use than there is from the same substance when used under the protection of a prior sanction; and I want to emphasize that such use under a prior sanction means that the substance has been found to be safe by FDA. Stilbestrol and certain arsenicals are good examples of additives which can be used by persons who obtain prior

approval but are not available for use by persons who now apply for approval, because of the Delaney clause.

Likewise, substances used in processed foods, which are subject to the food additives amendment, present no more hazard than pesticides on fresh fruits and vegetables, which are not.

Secretary Flemming has stated that he will request legislation to eliminate the grandfather clause from the food additives amendment as it applies to substances which induce cancer when added to the diet of test animals, since its operation is inconsistent with the Delany clause. Thus, that hastily adopted clause would be used as a basis for overthrowing the carefully devised prior sanction provision.

Secretary Flemming has announced also that he will apply the philosophy of the Delaney clause under the pesticide chemicals amendment. If that philosophy is a sound test of safety it could be applied under both the pesticide chemicals amendment and the food additives amendment without specific legislation. The point is that the Department should not be arbitrarily restricted by the Delaney clause in determining safety in the cases which come before it.

There is a final, fundamental consideration which further buttresses the conclusion which we have reached with respect to the statutory scheme.

It has been emphasized that the term "food additive" means a substance which is not recognized by qualified experts to be safe under the conditions of its intended use (sec. 201(s)); and that, consequently, substances which are recognized as safe under the conditions of their intended use, such as sugar and baking powder, are not additives at all and are subject neither to the restrictions of the Delaney clause, nor to those of any other provision of the food additives amendment.

This means, for example, that, as a legal matter, a substance found to be carcinogenic at a high level of intake could not be excluded from food under the food additives amendment, if it were generally recognized as safe at a lower level at which it is proposed for use.

The point of law is clear; and there are in fact many naturally occurring carcinogenic materials which are recognized as safe in common foods at levels of concentration in excess of the levels created in other foods by the artificial addition of the same or similar materials. These substances may be additives within the meaning of the statute, depending upon whether they are generally recognized as safe.

It seems evident to us that all substances suspected of being carcinogens should be treated upon the same scientific and legal basis. There is no more justification for permitting the use of a carcinogen by the application of the "generally recognized" principle of the statute, which could effectively exclude it from control by the Department, than there is to permit such a substance to be used upon the basis of an administrative finding that it is safe for the use proposed for it. In both instances the use would be sanctioned because the substance was safe under the conditions of such use. In the one case, the sanction is based upon general recognition of safety and in the other upon a finding of safety by the Secretary in the light of the evidence submitted to him.

The statutory analysis heretofore outlined, when considered in the light of the clearly defined and undisputed statutory concept that no substance which is generally recognized as safe is subject to the food

additives amendment (including its Delaney clause), seems to us to lend convincing support to the proposition that the Delaney clause, as construed by the Department, is entirely out of place in the context of the amendment and cannot be reconciled with one of its fundamental purposes—to get away from the old per se doctrine.

Some of the common foods and substances contained therein, which have been shown by controlled tests to produce cancer in animals by ingestion, under certain conditions, are these: Tannic acid, which occurs in tea, coffee, cocoa, red wines, and other foods, including whiskey; hens' eggs; estrogens, which occur in beef, milk, leafy green vegetables, soybeans, corn, lettuce, alfalfa, clover, wheat and oats, as well as in lobsters, beets, potatoes, and honey. Dr. Carney named others.

There is nothing surprising or novel about this since foods themselves are chemicals. We can be comforted by the thought that carcinogenic materials exist in our food supply at such low concentrations that they are apparently harmless or at least are generally recognized as safe by the experts.

It is immaterial that the substances named are "foods" within the meaning of the Food, Drug, and Cosmetic Act. A food may be an additive when used in other foods if it is not generally recognized as safe under the conditions of its use, even though its carcinogenic constituent occurs naturally and has not been added to the food in which it is present. For example, the Food and Drug Administration has recently published a list of spices, seasonings, essential oils, oleoresins, and natural extractives which are generally recognized as safe for their intended use within the meaning of the food additives amendment. If they were not recognized as safe they would be food additives. Among those substances listed as safe was tea. Tea contains tannic acid which, as has been noted, has caused cancer when ingested by test animals.

It seems evident that, if the carcinogenic substances listed or the foods in which they are present, were ingested in such quantities that qualified experts would regard their use in other foods as hazardous, they would not be generally recognized as safe within the meaning of the food additives amendment for the uses to which they are constantly put in human food. In fact, if there were a recognized hazard, we would hardly have been eating them at all. They would be regarded as poisons. Thus, it is clear that, as a legal proposition, conditions of use such as levels of ingestion and frequency of ingestion of carcinogens are essential considerations in the determination of the Department under the amendment. Moreover, in actual departmental practice, where such substances normally occur, as in tea, they are recognized as safe for addition to food or as components of substances added to food, despite the interpretation of the Delaney clause as announced by the Department. The conclusion cannot be avoided that an essential reason for the recognition as safe of many substances or the foods containing them, is the low level of their use or of their occurrence in such foods. The question to be determined is not whether conditions of use such as levels of intake are accepted under the "general recognition" test of jurisdiction, but whether, in a given case, a safe level of intake and other safe conditions can be established and what that level or those other conditions are.

As the above-listed examples show, this proposition has been recognized by the Department by its actions while it is being questioned in some of the Department's public announcements. An interesting instance of recognition of no-effect levels, in addition to those already cited, is contained in the releases of the Department relating to strontium 90, an admitted carcinogen, to which Dr. Carney has already referred.

The Department has conceded in these releases that there are safe levels of strontium 90 and other radioactive elements.

Strontium 90 and other radioactive elements occur in many foods. When these or constituents of them are added to other foods they become food additives, unless they are generally recognized as safe, as, for example, when alfalfa, in which strontium 90 is found, is added to baby food.

Thus, the statements of Secretary Flemming and the releases of the Department in question seem clearly to recognize a threshold or no-effect dose of the carcinogen strontium 90 and other radioactive elements, as well as of the other food substances above listed. Certainly we cannot justifiably attribute to the Department the policy of permitting the use of the materials in question as additives in other foods simply because they have been present in such foods or used for a long period of time. The Department has consistently opposed a "grandfather clause" based on prior usage alone and has, in fact, refused to list as safe a number of substances which have been in use for many years. Legally, therefore, not only is there a threshold dose or a no-effect level for the kind of carcinogenic substances which we have been discussing, but this fact has necessarily been recognized by the Department.

Since we hear a good deal about cosmetics, both at home and at hearings before this committee, it may also be noted that hormone creams, which contain estrogens, have been sold in the United States since the early 1930's. There is as yet no cosmetic additives legislation, but it is a pertinent consideration that the extension to cosmetics of the Department's Delaney clause concept, would deal a hard blow indeed to the daily rite of beautification with estrogen-containing creams.

In view of the law and the facts which have been reviewed, we are at a loss to rationalize the position of the Department. Its declarations and actions do not establish comprehensible guidelines for industry and the public. On the contrary, they confuse both and make it impossible to predict official actions or even to understand official policies. If there is a no-effect level for natural carcinogens, there must be one for added substances. Of course, nobody wants to add such substances to foods in quantities in excess of such levels.

We want to avoid any misunderstanding of our position. We do not advocate the addition to the carcinogenic materials normally in our food supply, of additional substances which may increase the proposition unequivocally in the statute that the regulatory agency—the Food and Drug Administration—shall be empowered to determine whether the addition of a particular substance will have that effect. This was the philosophy of the food additives bill as reported by this committee, with the approval of the Department, before the insertion of the Delaney clause and its subsequent per se interpretation by the Department.

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If common foods containing naturally occurring carcinogens are recognized as safe, as they must be at the current stage of man's development, it must also be recognized that similar added substances are just as safe within carefully guarded ranges, as, for example, ranges not exceeding those of the naturally occurring agents found to induce cancer in animals. The Department would be fully justified in prohibiting the use of additives in amounts which would be significant in the light of these considerations. Unless, however, we are going to condemn a major portion of our present supply of normally and universally consumed foodstuffs, there seems to be no reasonable alternative to the course which we have suggested.

Let me recall and again quote the statement made to Mr. Harris by Assistant Secretary Richardson in his letter of August 8, 1958:

> To single out one class of diseases for special mention would be anomalous and could be disinterpreted. Hence, in drafting the Department's bill we chose general language that would restrain the use of an additive that would have any adverse effect on the public health. This approach has been followed in H.R. 13254.

We are in full agreement with this approach.

The soundness of the Department's interpretation of the cancer clause is not the central issue. That issue we have already tried to define. Its resolution depends in the last analysis upon the attitude of the Congress, not that of the Department. The question of what the Delaney clause was intended by Congress to mean is, however, one facet of the problem under consideration which justifies some exploration.

The scant recorded legislative history of the clause, when evaluated against the background of the other provisions of the act and their extended legislative record, strongly suggest the conclusions that the Delaney clause was never understood by the Congress to have the per se meaning to it by the Department.

It has been emphasized that the factor of the conditions of use of additives as the basis for the determination of their safety, is a basic philosophy of the amendment, as evidenced by its legislative history and its provisions as enacted. It does not seem to make sense to devise a provision with the intention of forbidding the use of a certain class of additives without reference to the conditions of their use, when the very test of whether the same class of substance is subject to the statute at all is their recognition or nonrecognition as safe under such conditions.

It seems likely upon the basis of the record, regardless of the understanding of the Department of the meaning of the cancer clause, that Congress intended that its effect should be to emphasize the importance to be attached to the question of whether a substance might be carcinogenic, not to subvert the basic philosophy of the statute and create the inconsistencies which the Department's reading of it clearly does create.

We read the Delaney clause to mean, therefore, that the use of a substance is prohibited which induces cancer when ingested by man or animal under the intended conditions of its use. I hope that we have shown that if it does not mean this, a primary and essential purpose of the statute—to discard the impractical and unscientific restriction of the per se doctrine—has been effectively thwarted in a major

area of its application, and this by a provision upon which no hearings were afforded to the parties concerned.

There is recorded legislative history which supports this viewpoint. Thus, the Senate Committee on Labor and Public Welfare, in its report on S. 2197, the food additive bill in the Senate, stated as follows:

> We applaud Congressman Delaney for having taken this as he has every other, opportunity to focus our attention on the cancer-producing potentialities of various substances, but we want the record to show that in our opinion the bill is aimed at preventing the addition to the food our people eat of any substances the ingestion of which reasonable people would expect to produce not just cancer but any disease or disabiblity. In short, we believe the bill reads and means the same with or without the inclusion of the clause referred to. This is also the view of the Food and Drug Administration.[1]

It may be added that this was likewise the view of industry representatives, and was understood by them to be the view of the Food and Drug Administration, albeit the provision was regarded with apprehension. It was not until enactment of the food additives amendment, however, that it was found that the Department was placing the same restrictive, per se construction upon the clause which the amendment was expressly designed to supersede and thus had cast doubt upon past findings of the Food and Drug Administration as to the safety of certain substances, including new drugs, which are widely used today.

The position of the Senate committee as to the meaning of the Delaney clause is reflected also in the statement of the chairman of this committee, Mr. Harris, which was made on the floor of the House on August 13, 1958, in explanation of the committee amendment adopting the provision in question. Mr. Harris said:

> While the committee felt that the bill as reported by the committee includes the matter covered by the Delaney amendment in the general language contained in the bill, there was no objection to the amendment suggested by Mr. Delaney.

The weight traditionally given by the courts to statements in committee reports and debates on legislation is well known. Apparently, however, the Department is giving no weight to the report of the Senate committee and the statement of Mr. Harris with respect to the meaning of the Delaney clause, despite the circumstance that, as I have indicated, it is subject to a construction which would carry out the intention so expressed and despite the fact that only such a construction will make it compatible with the history and basic purposes of the legislation.

When interpreted as we have suggested, the Delaney clause would continue to exert a restraining effect upon the use of carcinogens. Its presence in the statute would continue as a statutory emphasis upon the caution which should be used in dealing with such substances. We consider such emphasis as unnecessary but would not object to it. Our proposal for an amendment to the bill is set forth at the end of this statement.

In conclusion I would like to make these remarks. The Department considers that it has been denied any discretion with respect to the use of food or color additives found to induce cancer in any animal under any conditions, as a result of its per se interpretation of the Delaney clause and the corresponding provision in H.R. 7624.

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[1] S. Rept. 2422, 85th Cong., 2d sess., p. 11.

It declares that there are no threshold or no-effect levels for carcinogens insofar as present medical knowledge has determined. This position was not announced by the Department until after the advent of the Delaney clause which was, of course, after the Food and Drug Administration had, for years, been dealing, under the new drug section of the act, with substances known to induce cancer in animals. Nevertheless, the Department perforce concedes general recognition of safety and hence excludes from its jurisdiction under the food additives amendment and the Delaney clause many common foods or substances contained in them, which induce cancer when ingested by animals. We respectfully submit that the resulting situation is neither logical nor tolerable for either industry or the public. We cannot dispense with the many common foods which are implicated in carcinogenicity. There is no evidence that consumption of these foods is harmful to human beings. It is quite evident that, as a practical matter, no-effect levels of carcinogens must be recognized and you have been given evidence that this proposition is sound as a scientific matter. For example, for the same reasons that foods such as hens' eggs and tea containing naturally occurring carcinogens are recognized as safe, foods to which such substances are added in amounts within the ranges in which they occur in nature, may also be found to be safe when the use of the additive is properly controlled by administrative regulation.

As a first step toward a return to the fundamental principles upon which the food additives amendment was based, we propose that the cancer clause in H.R. 7624 be revised, as suggested by Mr. Worley and Dr. Carney.

The only difference between the proposal written into Dr. Carney's statement and this one are the italic words in the last two sentences or the last two lines at the bottom of page 16. Those were inadvertently left out of Dr. Carney's statement. Otherwise it is the same, and the intent is the same.

SECTION 706(b)(5)(B)

A color additive (1) shall be deemed unsafe, and shall not be listed, for any use which will or may result in ingestion of all or part of such additive, if the additive is found to induce cancer when ingested by man or animal, *in an amount and under other conditions resonably related to its intended use*, or if it is found, after tests which are appropriate for the safety of *the* additive for *its intended use*, to induce cancer in man or animal * * *.

The substantive changes proposed, because of the Department's construction of the language now in the bill, are underlined. We suggest no changes in that part of the provision relating to color additives which will not be ingested.

This proposal will continue to place upon the proponent of the use of an additive the burden of showing safety to the satisfaction of the Department. This will include, of course, a showing in each case that, as a scientific matter, a threshold level exists for the substance which is proposed for use.

The present position of the Department of Health, Education, and Welfare implies an adverse reflection upon our supply of many common foods and drugs. We desire to see that reflection removed and sincerely hope that this committee and the Congress will take the necessary steps to that end.

Thank you.

The CHAIRMAN. Thank you, Mr. Williams, for your very fine statement in explanation of this problem, and the suggestions which you have made on behalf of the Pharmaceutical Manufacturers' Association.

Mr. Mack, do you have any questions?

Mr. MACK. No, Mr. Chairman, I have no questions.

The CHAIRMAN. Mr. Younger?

Mr. YOUNGER. Mr. Williams, I gather from reading your statement, which by the way is very well prepared, that if we are going to adopt the Delaney amendment, it should govern the entire Food and Drug Act or be out of all of it. It should not control just one phase of the act and be eliminated for all the other food and drug regulations.

Mr. WILLIAMS. I was not advocating, Mr. Younger, that the Delaney clause be applied to prevent the future use of the common foods containing carcinogens which have been named.

I was merely using those as an example of the extremity to which the interpretation of the Delaney clause has gone, and to show how inconsistent it is to interpret it as it is now interpreted when we are eating all of these foods anyway, which contain as much or more, sometimes, of carcinogenic substances as those which are being added.

Mr. YOUNGER. Well, is it not true that part of the present situation arises because it is in one place and it is not in other places, and it is confusing.

Mr. WILLIAMS. It is confusing?

Mr. YOUNGER. Yes.

Mr. WILLIAMS. I think the whole thing is confusing, Mr. Younger. Confusion is what we deal in. [Laughter.]

Mr. YOUNGER. Is the only way to clear this confusion: To leave the general subject the way it has been interpreted all the time; namely, whether food is safe for consumption, and leave it that way?

Mr. WILLIAMS. We have in the basic food additives amendment, as you reported it out in 1958, a provision which necessarily considers levels of activity and of toxic substances as one of the bases for determining safety, and when you have that, on the one hand, and on the other you have a clause in the act which is interpreted to do just the opposite, to prevent you from taking account of levels, then you are not making too much sense, to my mind.

Mr. YOUNGER. That is all, Mr. Chairman.

The CHAIRMAN. Mr. Dingell?

Mr. DINGELL. Thank you, Mr. Chairman.

You made quite a point of the fact that we are restoring the per se doctrine in the instance of coloring substances.

Would it not be more correct to say that we are permitting the people who use colors in foods and cosmetics and medicines to get away from the per se doctrine in this bill, with the narrow exception of substances which are cancer producing? Isn't that a more correct way of putting it, sir?

Mr. WILLIAMS. All I meant to say, Mr. Dingell, was that with respect to carcinogens in colors, that we are restoring the per se doctrine; that is all I meant to say.

Mr. DINGELL. Actually, in point of fact, the Delaney amendment already applies, at least as applied by the Food and Drug Adminis-

tration, already applies the per se doctrine and has since the last food additive bill, has applied the per se doctrine to carcinogens permitting the establishment of tolerances in other instances; isn't that a correct statement?

Mr. WILLIAMS. Yes, sir. Mr. Flemming has announced he is going to do that, and, as I said in the statement, if that is a proper basis for determining safety, then he does not need the Delaney clause at all.

Mr. DINGELL. With regard to——

Mr. WILLIAMS. With regard to either food additives or colors or cosmetics or anything else.

Mr. DINGELL. But it happens to be in there now.

Mr. WILLIAMS. It happens to be in the food additives amendment.

Mr. DINGELL. Do you know of any specific abuses that have occurred under this particular amendment of which the Secretary has been guilty under this particular amendment, that you would care to point out to this committee as a reason for the committee's doing away with the Delaney amendment or modifying it?

Mr. WILLIAMS. Well, I think two of the most, of the outstanding ones, are the arsenicals and stilbestrol which have been discussed.

Mr. DINGELL. Will you tell us where theer has been an abuse in the case of stilbestrol?

Mr. WILLIAMS. Well, you use the word "abuse." That was not my word.

Mr. DINGELL. I asked you to point out abuses and you pointed these two instances out.

Mr. WILLIAMS. That was not my word.

Mr. DINGELL. Well, I asked the question and you said these were abuses.

Now, are they abuses or not, and if so, why?

Mr. WILLIAMS. If you want to call them abuses, that is satisfactory to me.

Mr. DINGELL. I did not call them abuses. I asked you to point out abuses, and then you said these were abuses.

Now, are they abuses or not? I will let you change your story if you want to.

Mr. WILLIAMS. As I say, that is your word. I will say that they are a mistaken application of the statute, and if they are not mistaken, the statute should be changed.

Mr. DINGELL. All right.

Now, you say they are a mistaken application of the statute. In which way were they mistaken?

Mr. WILLIAMS. Well, I do not interpret the Delaney clause as the Department does. I think the legislative history shows it was not intended to be interpreted that way.

Mr. DINGELL. I was one of the members of the committee, and I interpret it just exactly as the Department interprets it.

Mr. WILLIAMS. Well, I certainly do not know how you interpret it, but I know that the Senate committee indicated rather clearly that they did not think it changed the amendment as it had been reported by this committee.

Mr. DINGELL. In fact, it was my recollection, as you pointed out in your testimony, that zero tolerance would be applied to substances

which were carcinogens whether, as or if the Delaney amendment were included or not.

Mr. WILLIAMS. Of course, I cannot——

Mr. DINGELL. That was my understanding of the matter previous to the time that H.R. 12354 was enacted.

Mr. WILLIAMS. I do not understand it, Mr. Dingell. I do not know what it was.

Mr. DINGELL. I would appreciate your assistance in construing the statutes, and I would like to see that my understanding perhaps either matches or conflicts with your understanding of these things, so that we can achieve intelligent approaches.

Apparently you are construing these statutes, and I am very appreciative of your help, but I was on the committee at the time, and I was on the subcommittee that reported these matters out, and I had some pretty definite understandings as to what these things applied to, and I now find that maybe my understanding was not correct, and if I am incorrect, I would like to be corrected right now.

Mr. WILLIAMS. Well, I cannot add to what I have said.

Mr. DINGELL. There are some things which you have said which concern me, the first of which is you talk about the establishment of threshold levels, and so forth. I am sure you will agree with me that there is substantial medical evidence that there is no proper way of establishing thresholds on these things with existing testing methods; am I correct on this?

Mr. WILLIAMS. I would prefer to leave Dr. Carney's testimony on that.

Mr. DINGELL. As you recall, Dr. Carney and I had some extensive discussion.

Mr. WILLIAMS. Yes.

Mr. DINGELL. But you want that discussion with me to stand in the record as it is.

But, as you recall in your testimony you made some rather profound statements as to the scientific merit of the Delaney amendment, and so forth and so on. Now I am asking you for some other statements, and I would like to see you not take refuge in Dr. Carney's statement, but to now stand on your own feet and give me some answers of your own on this.

Mr. WILLIAMS. The only statements I have made are those which I have been advised are sound, and I have no way of going beyond that.

Mr. DINGELL. You have been advised of these things and have no knowledge of your own on them?

Mr. WILLIAMS. I have been advised that they are sound and, of course, I will support all of the statements which I make with respect to the statute and the legislative background and the logical deductions which have been made as to the meaning of the Delaney clause. But I do not have any competence in the field of cancer.

Mr. DINGELL. Well then, you would say that we should give considerable credence to what you say with regard to interpretation of the statute, but that we probably should not pay any attention to your scientific conclusions?

Mr. WILLIAMS. I think my scientific conclusions were based on very sound advice.

Mr. DINGELL. Sufficiently sound so that you can stand on that, but not be examined further?

Mr. WILLIAMS. Well, I do not think that you and I would get far, frankly, in an argument on that point, Mr. Dingell, as much as I would enjoy it. [Laughter.]

Mr. DINGELL. You talked about strontium 90, and whether or not it should be construed as being subject to the Delaney amendment.

You also said that the fact that strontium 90 is in foods is also a basis for us to consider that there is a threshold level for safety.

Have you read some of the scientific works on this subject?

Mr. WILLIAMS. Now, just a minute. I did not say what you said I said, Mr. Dingell.

Mr. DINGELL. Well, I refer you to page 11 of your statement, and then ask you what you did say.

Mr. WILLIAMS. All right, I will tell you what I said.

I said that the Department, through the releases of Mr. Flemming and, perhaps, the Food and Drug Administration——

Mr. DINGELL. Were these releases directly construing the Delaney amendment?

Mr. WILLIAMS (continuing). Have recognized threshold levels of strontium 90 which is an admitted carcinogen.

I merely used that as an example of the inconsistencies to which you are led when you apply a per se construction to the Delaney clause.

Mr. DINGELL. Were these constructions of the particular statute, these press releases or these statements that you have referred to? These were not constructions of the Delaney clause or of the Food and Drug Act at all, were they?

Mr. WILLIAMS. No, they were merely recognitions of threshold levels.

Mr. DINGELL. Well, now I intend to go into that.

Further, as a matter of fact, these statements merely were that, as I recall them, and I am sure my recollection is about the same as yours, they were merely statements by the Department that they could not show that there was any harm coming from these substances; is that correct? And they did not come out and say that the milk was safe. They just said they cannot prove the milk was not safe; isn't that correct?

Mr. WILLIAMS. No, sir.

Mr. DINGELL. Then there was another body——

Mr. WILLIAMS. Do you care to hear what they said?

Mr. DINGELL. Yes, I would like to hear it.

Mr. WILLIAMS. This is the release of January 12, 1960:

Analyses of single samples of wheat, cabbage, and potatoes from 12 States, and one sample of soybeans from one of these States showed levels of strontium 90 to be within the limits recommended by the National Committee on Radiation Protection and Measurements as permissible for lifetime exposure.

Mr. DINGELL. This does not say they cause cancer or did not cause cancer, does it?

Mr. WILLIAMS (reading):

The Food and Drug Administration noted that the total radioactivity in the dried fruits above referred to was below the levels which would indicate a need to determine strontium 90 levels.

It is all in terms of levels, Mr. Dingell.

My only point was that they are recognizing there are levels below which there is no danger.

Mr. DINGELL. They did not say though this was a level below which or above which cancer would be created. They made no mention of cancer in those releases, did they?

Mr. WILLIAMS. I think it would have been even more embarrassing if they had, than it was.

Mr. DINGELL. But they made no mention of it, did they?

Mr. WILLIAMS. No, they did not.

Mr. DINGELL. And, as a matter of fact, there are a number of other things that you can determine from analysis of strontium 90, that it destroys bone marrow, it inhibits growth, it has a number of other toxic effects, including attacking the red blood cells and many, many other things; am I correct?

Mr. WILLIAMS. I do not know.

Mr. DINGELL. Well, these are true.

Now, you made one statement on page 12 that I wanted to point to. You said:

> We want to avoid any misunderstanding of our position. We do not advocate the addition to the carcinogenic materials normally in our food supply.

That would imply that much—it would imply that you would support the Delaney amendment which says, "We don't allow the addition of any additional carcinogenic materials." Am I correct?

Mr. WILLIAMS. Perhaps you did not read the whole sentence.

Mr. DINGELL. Well, as much as I just want to see whether our understandings are clear as far as we have gone.

Mr. WILLIAMS. Then the answer is I did not intend that because I state at the end a qualification which may increase the incidence of cancer among the population. That is the whole point.

Mr. DINGELL. Then you go on:

> Of the additional substances which may increase the incidence of cancer among the population. We desire simply to establish the proposition uniquivocally in the statute that the regulatory agency, the Food and Drug Administration, shall be empowered to determine whether the addition of a particular substance will have that effect.

Are you familiar with the work of the International Union Against Cancer, and more specifically the remarks of Dr. G. Burroughs Mider, M.D., on this subject?

Mr. WILLIAMS. I have a vague familiarity with those things.

Mr. DINGELL. I wondered if you drew from that some of the same things I drew, where he said that carcinogenic substances can have accumulative effect, both insofar as repeated exposure to the same substances, and so far as esposures to different substances at reasonably contemporaneous times, having accumulative effect?

Mr. WILLIAMS. I under stand that is true of many toxic drugs.

Mr. DINGELL. And he reported out that, as I understand, different persons would react differently to different carcinogenic substances. Did you draw that?

Mr. WILLIAMS. Did I what?

Mr. DINGELL. Did you draw that inference, too?

Mr. WILLIAMS. That persons——

Mr. DINGELL. Did you draw the same inference that I did that different persons would have different reactions?

Mr. WILLIAMS. I would assume different persons would react differently. That is true in many fields.

Mr. DINGELL. I wonder if you derive from that the same thing I did, where he says——

Mr. WILLIAMS. But there is nothing new——

Mr. DINGELL. Where he says that:

If a substance is shown by adequate tests to be carcinogenic for one mammalian species, it is probable that it is carcinogenic for many, but not necessarily for all others, although quantitative differences between species may be marked.

Did you get that inference from his work?

Mr. WILLIAMS. I have not read that particular part of his work. All I know is——

Mr. DINGELL. I would recommend it very highly. It might be that you would want to change your statement after you read it.

Mr. WILLIAMS. I listened to Mr. Flemming, and I read what Mr. Flemming quoted, but I assure you that our people have read it very carefully.

Mr. DINGELL. The last thing he said is this:

There are nontumorigenic levels of exposure to carcinogens for given experimental conditions, but threshold levels may be affected by a number of factors associated with carcinogenic process.

The burden of his remarks in this portion was that we cannot always fix levels; in fact, we cannot fix levels at all.

Would you take any issue with that, I wonder?

Mr. WILLIAMS. The fact that you cannot always fix levels?

Mr. DINGELL. That you cannot.

Mr. WILLIAM. I would assume you could not always. I do not know for a fact.

Mr. DINGELL. Would there be agreement between you and me as to this point all through your testimony here today?

Mr. WILLIAMS. No, sir, Mr. Dingell; because all we are advocating is that this whole matter be returned to a scientific basis; that the Department of Health, Education, and Welfare, through the Food and Drug Administration, be permitted to use its scientific facilities to determine in each case, in each specific case, whether a given substance, whether it is a carcinogen or some other toxic substance, is safe for use under the conditions under which it is to be used.

We are not trying to—we are perfectly willing to face the problem of convincing the Department in individual cases. That is a matter of evidence and scientific judgment.

Mr. DINGELL. What would you say about the substantial volume of scientific opinion, and informed scientific opinion, of capable, competent people, who say that any exposure to any one of these carcinogenic substances creates an irreversible change within the cell, which can never be changed, and which can never be reversed?

Mr. WILLIAMS. Well, as a layman, I would doubt it.

Mr. DINGELL. You would doubt it, as a layman?

Mr. WILLIAMS. As a layman. After all, we are——

Mr. DINGELL. After all, we, in ignorance, could agree or disagree.

Mr. WILLIAMS. We are exposed to them all the time.

Mr. DINGELL. These are scientific people.

Mr. WILLIAMS. We are exposed to them all the time we eat these.

Mr. DINGELL. I am aware of this. Do you want to take on any more of these substances than you have in your lifetime?

Mr. WILLIAMS. No, sir. I think that I explained my position. I wanted the Food and Drug Administration to decide what we should take on or what we should not.

Mr. DINGELL. Let me just ask you one or two more questions.

As a general premise, would I be correct in this, that if we err in the field of cancer and carcinogens, any error which is made in legislating in this field should be made on the side of safety of the consumers who will have to take this substance more or less unknowingly, unwittingly, and unintentionally; is that a correct statement?

Mr. WILLIAMS. If there is an error?

Mr. DINGELL. Yes. It should be made on the side of safety of the consumers.

Mr. WILLIAMS. Yes. I think, in general, that is true. But I think that whether——

Mr. DINGELL. But here we ought to make a specific exception?

Mr. WILLIAMS. But I should think it should be evaluated by a scientific agency, not by Congress. The way you did it before, when you passed this bill originally, you left it up to the scientific agency, the Food and Drug Administration. And then suddenly this clause was inserted, and now it becomes a great thing for some reason, I do not know why, just since last summer so far as I can figure.

Mr. DINGELL. Should not any error which is made in this field be made on the side of safety for the consumer, and I am talking about legislatively as well as scientifically?

Mr. WILLIAMS. If there is an error, naturally you would want to make it on the side of safety. But to my mind it would not be an error to give the decision to the qualified agency involved.

Mr. DINGELL. Thank you very much. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Keith?

Mr. KEITH. No questions.

The CHAIRMAN. Mr. Nelsen?

Mr. NELSEN. No questions.

The CHAIRMAN. Mr. Williams, I would like to turn to the last page of your statement for just one moment.

As I understand, under present law the burden is on the industry to show that there is nothing present in a particular additive that will produce carcinoma?

Mr. WILLIAMS. I believe it amounts to that; in effect, proving a negative, which, of course, is impossible.

The CHAIRMAN. Now, under the proposal of the language here, would the burden be shifted from the industry to the Food and Drug Administration?

Mr. WILLIAMS. No, sir.

The CHAIRMAN. The burden would still be on the industry then to show that such material were not present?

Mr. WILLIAMS. To the satisfaction of the Food and Drug Administration.

The CHAIRMAN. To the satisfaction of the Food and Drug Administration.

Mr. WILLIAMS. That is correct.

The CHAIRMAN. Now, the procedure by which a final decision would be made would be under the provision for a public hearing, and so forth; is that right?

Mr. WILLIAMS. Well, conceivably the matter could go to a public hearing. But scientific matters of this nature have very rarely, if ever, gone to a public hearing.

The CHAIRMAN. In other words, a decision could be made without a public hearing?

Mr. WILLIAMS. Oh, yes. Theoretically the industry can insist on a public hearing under certain circumstances. But the history of these dealings between industry and Food and Drug is that if the Food and Drug Administration announces or tells the industry informally that "We think that you have not given us enough material to justify our giving you a tolerance" or "that we think that there is some suggestion of carcinogenicity involved with this product," then the industry withdraws its application. That happens time and time again.

The CHAIRMAN. I call your attention to page 13 of the bill referred to, H.R. 7624, paragraph (d),

The provisions of section 701 (e), (f),

and so forth, and following that—

except that (1) the Secretary's order after public hearing (acting upon objections filed to an order made prior to hearing) shall be subject to the requirements of section 409(f)(2)

and so forth.

You do not think that would require a public hearing for the Secretary to take such action under the suggested modification?

Mr. WILLIAMS. As I said just a moment ago, under certain circumstances the applicant is entitled to a hearing. He is entitled to a hearing under certain circumstances. But, as a matter of practice, so far as I know, there has never been a food additive hearing; in fact, I am sure there has not been.

The CHAIRMAN. I note the Commissioner is sitting behind you, and shaking his head, so it must be that there have been some.

Mr. WILLIAMS. There have been some?

Mr. LARRICK. We have got a color additive hearing scheduled for February 17.

Mr. WILLIAMS. I was thinking of food additives. That is not under this legislation.

Mr. LARRICK. You see, he used to be our General Counsel. [Laughter.]

The CHAIRMAN. Well, with you backing him up he should know what he is talking about.

What you propose here would not deprive the Secretary of any of the authority that he has now to prevent the use of any such materials that may have cancer-producing material in it?

Mr. WILLIAMS. Correct.

The CHAIRMAN. In other words, it has been construed by the Department under present law that they have no alternative than to delist?

Mr. WILLIAMS. That is right.

The CHAIRMAN. And under the suggested modification here the Secretary would have the authority, if he determined that they were safe, to permit the use.

On the other hand, the Secretary would also have the authority and duty and responsibility in the protection of the public health and welfare of the American people, to prevent such use?

Mr. WILLIAMS. Yes, sir, that is correct.

The CHAIRMAN. And you think that should be a fair proposition?

Mr. WILLIAMS. Well, that is the one that your committee unanimously reported out in 1958.

The CHAIRMAN. That is the reason I cannot understand why there is so much difference in this thing because, as a matter of fact, as I stated before, I recall a statement that was made by the Secretary which said that he would have taken the same action that he did take even if he did not have the Delaney amendment.

Mr. WILLIAMS. What was that, Mr. Chairman? I did not hear that.

The CHAIRMAN. He said he would have taken the same action that he did take even if he did not have the Delaney amendment. Maybe he was misquoted in the press. I think it was in the press.

Mr. WILLIAMS. I think he did say that and, as I said in this statement, if his approach is a sound approach from the scientific standpoint, then he does not need the Delaney amendment to do what he has said he would do.

The CHAIRMAN. I have a feeling that we have reached a stage in all of this where there have been so many questions raised on the terrible disease of cancer, that perhaps, the Delaney amendment, if applied correctly, to permit those things that are in the interests of the American people and the health of the people, and to prevent those things where there is any chance of being harmful, probably would serve a worthwhile purpose.

Mr. WILLIAMS. If properly drawn.

The CHAIRMAN. Had it never been brought up, probably the health and welfare of the people would have been protected just as well. But now everyone, it seems to me, and there are so many people that I say almost everyone, is so conscious of cancer as a dread disease, and I think rightly and justifiably so—I know out of my own experience, only recently I had a little substance removed from my lip, a little sebaceous cyst on my back, and well, I know I felt a whole lot easier about 2 weeks after that when I was told that it was all right.

I feel that I am just an ordinary American citizen. People are so conscious of this deadly disease when it gets hold of them, that it seems to me arbitrarily to throw out the Delaney amendment would create so much fear in the mind of the American people in their reaction against industry that it might be pretty bad.

Mr. WILLIAMS. Do you think that such fear would be created if it were left in as an emphasis upon this problem, with the amendment which we propose?

The CHAIRMAN. No, I do not.

In other words, I have a feeling that it ought not to be so construed, and if it is so construed, that it should be modified, to permit the regular delegated administrative officers to deal with it practically, and in the best interests of the health of the American people.

I think, I have a feeling, that there is some danger, and it may be greater than we think, that there will arise a cancer scare as a result of knowledge that so many of our common foods do contain carcinogens.

Mr. WILLIAMS. These are just a few we have mentioned here today, and if this thing is agitated as it has been in the past, and then the facts are going to come out sooner or later, and I think it would be much better if we had a reasonable approach to the thing and put it back where it belongs with the Food and Drug Administration. They are perfectly capable of handling it. They have been handling it for years.

The CHAIRMAN. It seems to me that could be done in a way to maintain the intent and purposes——

Mr. WILLIAMS. Yes.

The CHAIRMAN (continuing). Of the amendment itself without destroying or deleting the amendment.

The way conditions are today I hope nobody will take milk away from us, but somebody will say that we cannot grow alfalfa hay any more or feed clover as a pasture.

It seems to me like getting down to the fine points, but it is a fact if the law is not changed within a matter of a few months some permanent law on color additives will be adopted, and it is going to be a lot more rigid than it is today.

Mr. WILLIAMS. They tell me, Mr. Chairman, that there are a great many more chemical substances than you would think even from what you have heard, which will, when ingested or injected in animals cause cancer under certain conditions and in certain strains of animals, and we do not know how many of these coal tar colors may do that.

We do not know how many other food additives may do that. We have never tested them, and we do not know how many other food additives may do that.

The CHAIRMAN. I would agree with that, as little as I know about it.

Mr. WILLIAMS. We just have no idea yet. But if we are going to put it on the basis that it is going to be put on, since the Delaney clause has been interpreted as it was by the Department, I do not know where we are going to come out, but it is not going to be good.

The CHAIRMAN. I think it should not be so rigid that the public would be deprived of something it should have.

On the other hand, it appears to me that we are living in an age when there are so many synthetics that are being used and additions to this or that or the other, for one purpose or another, that perhaps it is necessary to extend some rather drastic authority or power within the proper agency in order to deal with it, and it is no reflection on industry at all, but I do know that there is a constant growth of the use of additives whether we use it or whether we eat it.

Mr. WILLIAMS. I assure you they have plenty of power under these bills.

The CHAIRMAN. You mean under the bill?

Mr. WILLIAMS. Yes.

The CHAIRMAN. I know that is what you are complaining about.

Mr. WILLIAMS. No; I mean other than and aside from the Delaney clause.

The CHAIRMAN. I would not argue that question at all, but I still say that since it has already been included, to then try to eliminate it completely, I think, would bring on a lot more difficulty than it would be to try to adjust it in a way that makes it workable. That is my belief.

Mr. WILLIAMS. We made a suggestion for adjusting it.

The CHAIRMAN. Yes; and I want to compliment you on it, too.

I would be interested in analyzing it further in order to see if we can come to the same conclusion that you have come in presenting it.

Let me thank you again for your testimony that you have given to the committee.

Mr. WILLIAMS. Thank you, sir.

The CHAIRMAN. Mr. Peter Janss.

Mr. JANSS. Thank you, sir.

By your leave, Mr. Chairman and members of the committee——

The CHAIRMAN. You are Mr. Janss?

STATEMENT OF PETER W. JANSS, ATTORNEY REPRESENTING NATIONAL FEED INGREDIENTS ASSOCIATION

Mr. JANSS. My name is Peter W. Janss, and I have lived and practiced law in Des Moines, Iowa, since 1927.

Since 1945 I have represented the National Mineral Feeds Association, and its successor trade association, the National Feed Ingredients Association, comprised of some 70 member firms who manufacture and sell animal feed ingredients, and sometimes also manufacture and sell animal feeds.

Mr. Chairman, with your leave, may I interpolate here and then file this statement?

The CHAIRMAN. We will be very glad to let your entire statement be included in the record, and you can give a brief explanation of it.

Mr. JANSS. I am grateful to you and grateful to the committee for bearing with me while the great Midwest was under a terrific storm these last 3 days, resulting from a low-pressure area, and it was so intense as to break all records in Kansas City, some 19 barometic pressure.

I simply could not get here on time, and I am still very grateful for your giving me this opportunity.

Rather than read the statement or interpolate other remarks, I shall be very pleased to endorse almost entirely the philosophy and statements of Mr. Williams which he just made, on behalf of my association or, the association, rather, that I represent.

The CHAIRMAN. You represent the National Feed Ingredients Association?

Mr. JANSS. Yes, sir; and with that I think it would be well to not take more of your time because these points I have made in here too concisely of pressure of time are the same that have been made by other witnesses, so I am cumulative in what I say from a different source of persons testifying, but I think it would serve no purpose, and unless you wish to simply have me read what I have said, and I will thus save your time. If there are any questions, I will be glad to answer them.

The CHAIRMAN. Mr. Janss, let me on behalf of our committee thank you for your appearance here. I know you have been snowbound.

Mr. JANSS. Yes, indeed.

The CHAIRMAN. You came here after great effort and certainly you are entitled to make your statement to the committee.

Mr. JANSS. I understand that, but they have been made for me.

The CHAIRMAN. We appreciate having your statement. As we look over it rather hurriedly we do see that it takes the same position and line as testimony previously presented——

Mr. JANSS. That is right.

The CHAIRMAN. By Mr. Williams.

Mr. JANSS. That is right.

The CHAIRMAN. Are there any other questions of Mr. Janss?

Mr. DINGELL. Mr. Chairman, I was just wondering if Mr. Janss' organization colored the feed that it sells to the feeders?

Mr. JANSS. I did not quite get that.

Mr. DINGELL. Do feed manufacturers color the feed that they serve, that they package and sell?

Mr. JANSS. Only in specialized situations such as, for instance, mineral feeds are often colored by the use of iron oxide which gives a reddish color to it, but it is also a nutrient. It is also classified as a mineral nutrient.

We also sometimes color it by use of carbon black which is not classified as an essential nutrient, but is carbon, at least, and is utilized by the body.

But ordinarily we do not color it in the sense that you are talking about.

It is true, however, that under the definition of the color additive amendment practically everything we put in our feeds does impart some color and does qualify as a color additive under its definition, practically everything, including corn.

Mr. DINGELL. Perhaps you are not familiar with the letter of the Food and Drug Administration which was inserted in the record of the hearings yesterday which went a long way to clarify that, but I would suggest that you direct your attention to that letter at your ealiest convenience.

Mr. JANSS. I should be very glad to.

Mr. DINGELL. How it affects your people. It affects your people in a way that you might have reason to think——

Mr. JANSS. I would be very pleased to do so.

Mr. DINGELL. If you would refer to page 4 of your statement, as I read it here, it refers to, I believe, the Delaney amendment. You specifically endorse, as I understand it, the amendment that has been suggested by the witness who preceded you; is that correct?

Mr. JANSS. Yes, I do.

Mr. DINGELL. As a matter of fact you urge really that when a substance is fed, according to its intended use, it leaves no residue, carcinogen, in the tissue of the animals—rather let me say this: As I read your statement, it would satisfy your organization if it would not be a violation of basic food and drug law or proposed amendments, if the substance when fed according to its intended use leaves no residue of carcinogen in the tissues of the animals, at least if that situation would result in no violation; is that correct?

Mr. JANSS. As far as carcinogens are concerned, that would seem to me to be adequate.

Mr. DINGELL. That would satisfy you?

Mr. JANSS. Yes; it would.

Mr. DINGELL. In other words, if no residue is left in the tissues, then the substance is proper for feeding.

Now, as I read the situation with regard to stilbestrol, that is precisely what is done today. In other words, they say as long as there are no carcinogens and no remains in the tissues, it is all right to feed to human beings.

Mr. JANSS. Their difficulty lies in the prior sanction situation. Diethylstilbestrol is being fed now and because I endorse the position of diethylstilbestrol as permitted in new drug applications because it does not leave carcinogens in the tissues, their difficulty lies in the fact that because it is a new drug status, they must now take off the market, by virtue of the amendment any new application for the use of diethylstilbestrol however it may be formulated in a feed, a new feed, or a formula.

For instance, to illustrate, one of my members uses diethylstilbestrol in the feed now. If he would change the percentage, for instance, of soybean meal in that particular feed, he would have to come down to Food and Drug Administration and obtain a new application for that changed formula.

The position of the Food and Drug Administration is that he cannot so obtain such a new application with that formula. He is frozen with such prior sanctions as they have already issued with reference to diethylstilbestrol.

Mr. DINGELL. But this is not because of the Delaney amendment.

Mr. JANSS. Yes, sir.

Mr. DINGELL. It is?

Mr. JANSS. It is my understanding it is; yes. You see, before the Delaney amendment was passed, they had approved a number of uses of diethylstilbestrol in animal feeds.

As it was passed and as it was interpreted by the Food and Drug Administration, their counsel there said no more. That meant that no change in the existing feed could be made and approved, because that would require what they call a new, or an extension of the new drug application.

So they said what is out now is out, nothing more.

And this causes, incidentally, a very difficult situation in the feed trade, because some people are using diethylstilbestrol in their feeds and others cannot. This is because of the interpretation of the Delaney amendment to the food additive amendment, not to the color additive amendment.

But that is the reason it is so.

Now, whether that be right or not, I am not here to say. But this is the reason I say, or suggest, on behalf of my people, that the test should be in the residues in the tissues of the animals that are fed our animal feeds.

Now, I am not talking about human foods. I agree with what Mr. Williams has said, from what I know about it through information given to me, that there are any number of carcinogens that are eaten by all of us every day in our normal foods, human foods.

And so all I say here, as far as diethylstilbestrol is concerned, and other such carcinogens, is that if they leave no evidence in the tissues of the animals that are eaten by man, then they should be permissible, permitted under the guidance of the Food and Drug Administration.

I go exactly with him in saying let them decide. They are more competent than perhaps the Congress, more competent, perhaps, than anyone else to do just that job, and give them that power and let them do it. That is what I say.

Mr. DINGELL. Thank you.

Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Nelsen?

Mr. NELSEN. Do I understand stilbestrol, for example, that is presently under the existing law, under the Delaney amendment that is now approved for use in feed, may continue to be used in feed?

Mr. JANSS. Yes, sir.

Mr. NELSEN. The permits have been issued?

Mr. JANSS. Those that were issued before the Delaney amendment became effective.

Mr. NELSEN. Yes, and new applications would, under the Delaney amendment, be denied?

Mr. JANSS. Yes, sir.

Mr. NELSEN. Therefore, under the circumstances that we now deal with, those who may fear the use of stilbestrol still have the problem before them, right or wrong, it is a situation that does exist.

Mr. JANSS. Your observation is true. I don't know whether you can balance it out or not. But then your observation is accurate.

Mr. NELSEN. What I mean by that is some may use it and some may not.

Mr. JANSS. That is right.

Mr. NELSEN. As I understand it, industry is not objecting to the fact that all of these additives need be examined. They merely are asking for clarification of the law so a uniform application may be made.

Mr. JANSS. I think that is part of our request, part of my request, let's put it that way.

I think I would agree with that, but I want to go one step further.

I want to do what Mr. Williams said, give the power of determination as to whether or not this particular drug or food additive or color additive, or carcinogen, whatever you may want to call it, that may have some potential danger to animal or man, leave it to them, whether or not it is safe, as distingiushed from putting in an adamant clause that says if it is found to induce cancer in man or animal in any circumstances, or under any conditions, that it cannot be used anywhere.

That is the potential difficulty. We are also faced—this is incidental to this, but I stated, if you will permit me, incidental to this is a thing that is faced by some of my people. We have already under the food additives amendment a classification of certain other materials, not carcinogens as far as we are told, unless they might be unknown to us, are classified now as to limits which may be used.

They are ordinary mineral nutrients, such as iron sulfate, cobalt sulfate, and a number of others, cobalt, iron, manganese, and copper. They are now saying that they can be limited, used only in certain limited areas.

Whether or not they have authority to do that under the Food and Drug Act, the food additives amendment, I am not sure. But this is again one step further and I am not complaining about this.

I think they are doing what they should do. We have to find out whether they have the authority or whether it is right. But it does indicate that the Food and Drug Administration is very active, very active in taking care of the people of the United States.

They are doing their best. We may have to fight them on some of the limitations they are placing upon us now. But I don't have any doubt at all but what they are doing a fine job, and that they are trying to do the best thing.

I think their feeling must be, or is, rather, that we put them in a legal straitjacket here where they, themselves, must do things they don't want to do and injure the people in the doing. We must incidentally, I think, keep alive a very, very strong, virile and significant activity in the land grant colleges all through the country in experimentation with animals and in bringing out new things.

True, I am sure, it is commercialized to some extent but I think they are doing a magnificent thing through industry for the building of more food and better food. And if, parenthetically, the population explosion is real, why we will need that.

Mr. NELSEN. I rather join with the chairman in the fear of alfalfa being barred, because I would be in a bad way with my dairy cows if I couldn't feed them alfalfa.

Mr. JANSS. Those are but one of a few, I guess.

The CHAIRMAN. Thank you very much.

Mr. JANSS. Thank you, Mr. Chairman and gentlemen.

The CHAIRMAN. I hope you have better luck trying to get back home than you did coming up.

(The prepared statement of Mr. Janss is as follows:)

STATEMENT OF THE NATIONAL FEED INGREDIENTS ASSOCIATION

Mr. Chairman, my name is Peter W. Janss and I have lived and practiced law in Des Moines, Iowa, since 1927. Since 1945 I have represented the National Mineral Feeds Association and its successor trade association, the National Feed Ingredients Association, comprised of some 70 member firms who manufacture and sell animal feed ingredients and sometimes also manufacture and sell animal feeds.

Our members have a more immediate and direct interest in the food additive amendment to the U.S. Food, Drug, and Cosmetic Act, but have asked me to express to you on their behalf an objecton to some of the provisions contained in H.R. 7624, commonly referred to as the House color additive amendment.

Stated very concisely these ingredient and feed manufacturers wish to clearly separate the color additive amendment from the food additive amendment so that the provisions of the one cannot be interpreted as being applicable to the other.

Section 101(a) of H.R. 7624 effectively excludes a color additive from the definition of a "food additive" set out in section 201(s) of the Food, Drug, and Cosmetic Act. But section 101(b) of H.R. 7624 in lines 18 to 25 inclusive on page 2 and lines 1 to 9 inclusive on page 3 defines a color additive among other things as including "(A) * * * a substance * * * derived, with or without intermediate or final change of identity, from a vegetable, animal, mineral, or other source, and (B) when added or applied to food, drug, or comestic, * * * is capable (alone or through reaction of other substance) of imparting color thereto * * *." The term "color" includes black, white, and intermediate grays (lines 11 and 12, p. 3, H.R. 7624)

Such a definition will clearly include substances which fall within the definition of "a food additive" as set out in section 201(s). Practically any ingredient

placed in animal feedstuffs will impart some measure of color thereto, and practically every such substance falls within the meaning of the definition of "food additive" unless it be exempted by the provisions of section 201(s).

The proposed color additive amendment as set out in H.R. 7624 is, of course, substantially different than the food additive amendments already enacted into law and it is our present desire that the provisions of the color additive amendment be not invoked by the Food and Drug Administration as a part of their administration of the food additive provisions of the law.

To state it simply we agree that the food additive amendment should not include a "color additive" all as provided in section 101(a) of H.R. 7624, but we also believe that the definition of a color additive should comparably exclude a "food additive" so that a substance must fall in one or the other of the two categories and be there alone controlled.

Without the suggested amendment it is not only possible, but probable, that the Food and Drug Administration will be constrained to utilize the rather stringent provisions of the proposed color additive bill to exercise control over feed ingredients which are now exempted from the food additive amendment because they are shown to be safe through experience based on common use in food under conditions of their intended use for a period long preceding January 1, 1958. While this may seem a somewhat tenuous legal argument, yet experience has shown that the department literally follows theh language of the law and in this instance both can and will, where necessary, interpret the color additive amendment so as to include practically all food additives because each of them impart some measure of color to animal feeds, and yet at the same time exclude all color additives from the effect of the exemptions set out in the food additive amendment (201(s)).

We respectfully submit this possibility can and should be forestalled by the adoption of the following rather simple committee amendment:

Amend line 4 of page 3 of H.R. 7624 by adding after the word "include" the words "a food additive or".

We also respectfully submit that the particular language of section 103(b) lines 11 to 22 inclusive, page 10 (proposed sec. 706(a)(5)(b) of H.R. 7624) is substantially different in context and meaning than a comparable clause in section 409(c)(3)(A) of the Food, Drug, and Cosmetic Act relating to food additives.

The National Feed Ingredients Association here registers earnest resistance against form of the provision for the reason that it places beyond any possible use very valuable color compounds and perhaps nutrients simply because under extreme conditions and in extreme amounts the particular substances might induce cancer in either man or animal. The same interpretation has already been placed upon similar language in section 409(c)(3)(A) of the act.

This subcommittee will likely hereafter receive testimony from witnesses technically competent to discuss the impact of this conclusion upon the agricultural economy of United States and who may also have suggestions for the committee concerning the restatement of the subject language in H.R. 7624. For our purposes we here quickly state that we believe that the livestock industry of United States and the agricultural economy of the United States, while completely sympathetic with all legitimate measures against the biological induction of cancer in man, still very properly insist that cancer as such in animals can and will be adequately protected under existing adulteration provisions of sections 402 and 501 of the Food, Drug, and Cosmetic Act. This subcommittee should also consider what is known as the Delaney amendment to the food additive amendment appearing in section 409(c)(3)(A) and amend the same by at least deleting the language which impels the banishment of any substance as a food ingredient (unless otherwise exempted) which under any circumstances and under any amounts may induce cancer in an animal.

Another possible amendment of both the food additive law and the color additive law with reference to carcinogenic materials would encompass a permission for use, if the substance when fed according to its intended use left no residues of the carcinogen in the tissues of the animals.

We speak to these philosophies with respect to food additives because the color additive amendment seems to be even more restrictive than the food additives provision of the act and also because, as aforesaid, our interpretation of its language would permit the use of more arbitrary restrictions against potential carcinogens in food additives which technically qualify as a color additive under the present language of the H.R. 7624.

The National Feed Ingredients Association through me extends to this committee sincere thanks for the privilege of appearing before it and extending the foregoing comments on H.R. 7624 on the public records of the committee.

The CHAIRMAN. For the final witness this afternoon we have Dr. Harold Aaron.

Dr. Aaron, will you identify yourself for the record?

STATEMENT OF DR. HAROLD AARON, MEDICAL ADVISER TO CONSUMERS UNION

Dr. AARON. I am Harold Aaron, a physician and medical adviser to Consumers Union.

I regret, Mr. Chairman, that I have not prepared copies for the members of the committee.

As a practicing physician I just barely was to make a train to get down here.

The CHAIRMAN. Will you give us your address.

Dr. AARON. My home address is 190 Leonia Avenue, Leonia, N.J.

I am medical adviser to Consumers Union, a nonprofit membership organization and publication with some 850,000 member subscribers.

Since its founding in 1936, Consumers Union has played an effective part in education of the consumer in problems of the wholesomeness and safety of foods, drugs, and cosmetics.

It has also contributed to legislative efforts intended to fill gaps in consumer protection, in the Federal Food, Drug, and Cosmetic Act, the Poultry Inspection Act, and other consumer legislation.

Consumers Union welcomed the work of this committee of the House during hearings and subsequent enactment of the Food Additive Amendment of 1958.

We considered the food additive amendment the most important consumer protection legislation since the passage of the Federal Food, Drug, and Cosmetic Act of 1938.

We believe that the principle that the safety of an additive should be proven by a manufacturer prior to marketing is sound public health and administrative policy, and should be extended to all color additives.

We also believe this principle should be extended to materials in cosmetics and to theraputic devices. At the moment, however, we are concerned only with the use of colors in foods, drugs, and cosmetics.

The test upon which the present coal tar colors depend for their acceptability are acknowledged to be outmoded. They date back, many of them, to half a century.

In 1950, when many children were made sick by an unusually hard concentration of FDC orange No. 2 in Halloween candy, it became clear that the early tests had not been adequate. Using improved methods, the FDA began to recheck its colors.

A substantial proportion of the colors restested so far proved to be not harmless within the meaning of the law. We believe that a bill to deal effectively with the problem of color additive should have the following features:

It should require industry to prove that its use of the color will be safe from the point of view of acute or chronic toxic and carcinogen effects.

It should allow the FDA to set tolerances for color in amounts that will not produce toxic effects.

It should forbid the use of any color in any amount that causes cancer in man or animal, distinguishing, of course, between the external and internal use of such colors.

It should extend the new color relations to synthetic colors, to colors extracted from vegetable and other natural sources, as well as to coal tar dyes, so that all coloring agents will be under one law.

And it should forbid the listing of any color for a use that will promote deception of a consumer.

We support H.R. 7624 introduced by the chairman, a bill S. 2197 with essentially these provisions, excepting for the absence of the Delaney clause as passed by the Senate last year. Last fall's cranberry episode illustrated the value of the Delaney cancer cause in bolstering the FDA's ability to deal effectively for consumer protection.

Consumers Union considers such a clause in the color law essential to the proper protection of a consumer.

As Arthur Flemming, Secretary of the Department of Health, Education, and Welfare, pointed out, a scientist cannot establish a safe tolerance for humans for chemicals which cause cancer in animals.

On the basis of previous experience with carcinogens, on the basis of experimental data provided by experts in carcinogenisis, it is impossible to state what is a safe dose of a carcinogen for humans.

Sound public health policy demands, if there is any evidence that a substance is carcinogenic for any animal, in any dosage when taken by mouth, that that substance be considered a human carcinogen and that it should be excluded from the food supply before harm to a single human being has been demonstrated.

To deny the carcinogenic properties of a material on the grounds that no case of cancer in humans has been proven to be caused by the chemical is neither good scientific logic, nor consistent with good public health policy.

As has already been mentioned at the hearings, a comprehensive statement on the role of certain chemical and physical agents in the causation of cancer was prepared by Dr. Mider and presented to this committee. I should like to quote from page 29 of this statement, particularly Dr. Paul Kotin's observation on weak carcinogens. Dr. Mider quotes Dr. Kotin:

> Conservatism necessitates a virtually all or none concept in utilizing experimental data for humans. A large number of workers in the field of experimental carcinogenisis have erroneously tended to deprecate the clinical importance of experimental weak carcinogens.
>
> To implicate a potential experimental carcinogen as representing a greater human hazard is perhaps understandable, and, indeed, numerous clinical and epidemiological studies have shown such relationship to exist. To minimize the importance of, or to dismiss a weak experimental carcinogen in terms of human significance is wholly unsupportable.

The impossibility of establishing a tolerance for carcinogenic materials, a threshold level for such materials is accepted by leading and unbiased cancer investigators. When there is some evidence of

carcinogenic action in any experimental animal, it cannot be concluded that very low doses would produce no cases in the human population. Hence the question really is not whether certain chemicals or colors do or do not produce cancer in humans because the only way to fully prove this is to deliberately expose people for 20 years and to wait for 20 years after they have been exposed.

The question is, shall we err on the side of safety or on the side of the commercial use of a chemical or color additive.

Doubt as to the freedom from toxic effects of many colors employed in food, drugs, and cosmetics has already been established by tests of the Food and Drug Administration and by actual clinical episodes in the population. In 1950, as I already pointed out, many children were made sick by a heavy concentration in Halloween candy of a certified orange dye, F.D. & C. Orange No. 1. In October 1955, children were made sick by the same dye present in a popcorn confection. In December 1955, nearly 200 people, mostly children, were made ill after eating popcorn colored with F.D. & C. dye No. 32. So there is no question that colors employed in foods can be toxic; that colors used in foods, drugs, and cosmetics have carcinogenic properties is more difficult to establish, since tests have to be carried on during many years in several species of laboratory animals. But a number of such food colors are listed in the report by Dr. Shubic and Dr. Howell, I believe, of the U.S. Public Health Service in a compilation of carcinogenic substances published by the Public Health Service.

Tests on the carcinogenic properties of food colors should be performed as well as on those colors used in drugs or cosmetics or on any color that eventually gains access to the digestive tract.

A spokesman for the certified color industry objects to the cancer clause in H.R. 7624 because—

> it singles out for special and prohibitory treatment an element cancer potentiality which is but one of the many complex factors which bear on the basic test of safety, and it really adds nothing to that test.

This spokesman, I am afraid, underestimates the importance of cancer control in this context. Cancer potentiality is not just one of many complex factors. It is in Consumer Union opinion the heart and soul of this legislation, the most important of the factors bearing on the basic test of safety. Consumers do not underestimate the importance of cancer potentiality of color additives, and if there is a single test by which the American consumer will apprise the merits of a color additive bill such as H.R. 2794, it is by the presence or absence of the cancer clause.

The fact that carcinogenic materials are found naturally in certain foods as emphasized by spokesmen of the pharmaceutical industry is no justification for adding to the burden of carcinogens to which the population is exposed.

It is justification for additional study of these foods or other natural substances to determine the full carcinogenic potential of these foods. We all consume butter and eggs, cream, and other fatty foods, and these are natural products. And yet there is a significant medical opinion in this country that for some sections of the population these natural foods in excess may be harmful, and the fact that weak carcinogens are present in natural foods is no justification,

it seems to me, for the establishment of the principle that a threshold of tolerance is possible for carcinogens that are added to the foods, to the drugs, or to our cosmetic materials.

In the light of present knowledge of threshold effects of carcinogenic substances, the per se doctrine expressed in the Delaney clause is the only doctrine that is scientifically and morally justified. If and when it is discovered that a tolerance or threshold level for a useful chemical can be established as free of carcinogenic danger, then it is reasonable, proper, and possible for the FDA to request and obtain an amendment from Congress permitting the establishment of tolerance levels for carcinogens. There are many other features in the House bill that deserve discussion and emphasis, but I shall not take the time to do this since it has already been done so well by Secretary Flemming in his statement of January 26 before this committee.

Consumers Union fully and enthusiastically endorses Secretary Flemming's statement. It is a statement that fairly balances the requirements of public health with the proper interests of private industry. The passage of H.R. 7624 would strengthen the conviction of consumers that our food and drug laws are primarily concerned with protection of the public health, and not with commercial interests. Ultimately the commercial interests of food, drug, and cosmetic manufacturers will be advanced when the public has confidence that our laws safeguard the wholesomeness and safety of these products, and that the Food and Drug Administration has the integrity, dedication, and the resources to enforce these laws. During recent years the American consumer has come to trust the integrity and dedication of the Food and Drug Administration. They do not have the same trust and confidence in our Federal laws governing food, drug, and cosmetic products.

Passage of H.R. 7624 without any weakening amendments and with the Delaney cancer clause intact will go far to strengthen the confidence of consumers in the wholesomeness and safety of our foods, drugs, and cosmetics. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much, Doctor. We appreciate having your interesting and informative statement. Mr. Mack, any questions?

Mr. MACK. Doctor, are you an officer in Consumers Union?

Dr. AARON. No, sir.

Mr. MACK. Where is the headquarters of this organization?

Dr. AARON. Mount Vernon, N.Y.

Mr. MACK. You say you have almost a million members?

Dr. AARON. Subscribers and members combined. I think we have about 400,000 members and the rest are subscribers or new stamp purchasers.

Mr. MACK. It is principally a publication?

Dr. AARON. It is principally a publication that reports tests on materials that the consumer uses, on services that the consumer makes use of.

Mr. MACK. Is it similar to Consumer's Guide?

Dr. AARON. It publishes Consumer's Reports. There is another organization called Consumer's Research, our rival and competitor, that publishes a consumer publication. I think it may be called Consumer's Guide, but I am not sure. I shall be glad to send you copies, Mr. Congressman.

Mr. MACK. I am not very familiar with your organization. I have heard of various consumer organizations, but I was wondering if this was an organization which actually had members.

Dr. AARON. Yes, it does.

Mr. MACK. Is this the largest one with membership?

Dr. AARON. That is right.

Mr. MACK. It has members in all the States of the Union?

Dr. AARON. Members in all the States of the Union, in Canada and possibly in some foreign countries, although I am not sure about whether we permit foreigners who subscribe to become members as well.

Mr. MACK. What are the dues of your organization?

Dr. AARON. $5 a year.

Mr. MACK. And that includes the publication?

Dr. AARON. That includes the publication. It is a nonprofit organization.

Mr. MACK. How much is a subscription to the publication without membership?

Dr. AARON. The same fee, $5.

Mr. MACK. Then it would appear to me that you would have 8,000 members.

Dr. AARON. Some subscribers do not wish to participate in the voting and other obligations of membership. They prefer simply to subscribe to the publication.

Mr. MACK. So you have two classes of subscribers.

Dr. AARON. That is right.

Mr. MACK. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Younger.

Mr. YOUNGER. Doctor, earlier in your testimony you used the expression that something was "found not harmless." Can you pick that out of your testimony.

Dr. AARON. Something was found not harmless?

Mr. YOUNGER. Yes, you used the expression "not harmless" earlier in your statement.

Dr. AARON. I think it is—

Hence the question is not whether certain colors or chemicals do or do not produce cancer in humans, because the only way to fully prove this is to deliberately expose people for 20 years. But the question is shall we err on the side of safety?

Mr. YOUNGER. No. Are you reading from something you have written?

Dr. AARON. Yes, that is something I have written.

Mr. YOUNGER. Or are those quotations from a paper? You had some printed things there.

Dr. AARON. Yes; that is what I published in Consumer Reports. I am including some portions that appeared in last month's issue of Consumer Reports.

Mr. YOUNGER. You are not quoting from somebody else?

Dr. AARON. No, sir.

Mr. YOUNGER. You cannot find that expression that you used, "not harmless"?

In other words, it sounded as though you were advising that these carcinogenic substances were not harmless if used in a certain manner. That is the way the testimony sounded when you read it.

Dr. AARON. No; I had no intention of conveying that meaning, Mr. Younger.

Mr. YOUNGER. That is all, Mr. Chairman.

The CHAIRMAN. Mr. Dingell.

Mr. DINGELL. Thank you, Mr. Chairman.

Doctor, are you familiar with this substance stilbestrol?

Dr. AARON. Yes, sir.

Mr. DINGELL. You are a doctor of medicine, are you not?

Dr. AARON. Yes, sir.

Mr. DINGELL. You have been practicing medicine for how long?

Dr. AARON. Twenty-five years.

Mr. DINGELL. Do you prescribe stilbestrol?

Dr. AARON. I do prescribe stilbestrol, but with caution, because I consider it a powerful hormone. I have heard some of the testimony about stilbestrol here, and I would be identified with the point of view that Dr. Mider took about the precautions required in the administration of stilbestrol. It is very difficult to connect the administration of a drug or a hormone with the subsequent development of cancer or injury to a human being. There are so many factors that contribute to the evolution of a single disorder, particularly of one like cancer, so many factors that are involved, that it is very difficult to isolate one factor and say that is responsible. Particularly in the development of cancer there is the concept of multiplicity of factors which has been emphasized by all cancer investigators. If factors A, B, and C are necessary to produce a cancer, and if you eliminate factor C, the cancer does not develop, then that factor C is of great importance in the evolution of the cancer. Now, it is possible that in some individuals stilbestrol can cause cancer, and I know personally gynecologists who will refuse to prescribe stilbestrol if there is a history of breast trouble in the family, or if there is a history of cancer in the uterus in the family. They will prohibit the use of stilbestrol in their patients irrespective of the medical indications for the use of stilbestrol.

Mr. DINGELL. These are sound men.

Dr. AARON. These are well-known investigators in their field or specialists practicing medicine who, in the light of researches in this field are convinced that for some individuals stilbestrol can be harmful if not a dangerous drug.

Mr. DINGELL. Possibly because of cancer producing——

Dr. AARON. Because of the possible effect it may have on susceptible segments of the population. I do not know whether I am in order in quoting from my own consultant, but my wife has a cystic mastitis of the breast, and we consulted with Dr. Hagenson, who is professor of surgery at Columbia University, and the consultant in breast cancer for the American Cancer Society, and he warns her against using stilbesterol, because of the possibility that it may have, and he can't be sure, nor can anyone else be sure, it may be a significant factor in the evolution of cancer of one or more organs, and that is why most doctors are very cautious in their administration and prescription of stilbestrol.

Mr. DINGELL. I wonder—you have been sitting here very patiently, Doctor, and you have listened to the testimony of a number of previous witnesses. You favor the language of the Delaney amendment as it appears in the original bill; am I correct on that?

Dr. AARON. Yes, sir.

Mr. DINGELL. You do not favor any watering down of it——

Dr. AARON. No, sir.

Mr. DINGELL (continuing). To include "in an amount and other conditions reasonably related to its intended use."

Dr. AARON. No, sir. I believe there should be no discretion involved in the enforcement of a regulation dealing with a cancer or carcinogenic agent, that discretion may sometimes be converted into whim, and whim has no place, whim or discretion have no place in public health policies, particularly when it concerns problems of epidemic importance. When the water supply of a city is polluted and there is a danger of a typhoid epidemic, we do not leave it to the discretion of the commissioner of health to announce this to the population. By law the commissioner of health, at least in my city, is compelled to take immediate and strong action to prevent harm to the population. Well, I contend, and I think many other doctors do contend, that we are faced with an epidemic, an epidemic of cancer, a chronic disease, and that all measures that will protect the public health should be taken, even at the cost of discomfort or sacrifice, financial sacrifice, to some segments of industry.

Mr. DINGELL. Let me ask you this question, Doctor. How is the medical knowledge on cancer? Is it as extensive as let's say the knowledge on heart disease or rheumatism or arthritis or let's say some of the other diseases like typhoid or even polio?

Dr. AARON. Our knowledge of the diagnosis of these diseases is considerable. Our knowledge of the causes of these diseases is fragmentary, to put it charitably.

Mr. DINGELL. Are you referring to cancer?

Dr. AARON. I am referring to cancer, arthritis, heart disease, and other chronic disorders. We know very little about the causes of these disorders. We have some clues, we have some evidence, we have some directions, but these fragmentary pieces of evidence have not been brought together into a comprehensive view of the causation of any one of these chronic disorders. Therefore, I think in the absence of definite knowledge, we must use whatever information we have to protect the population, and that information dictates, it seems to me, that any substance that is carcinogenic in any species, by a route that is natural to human consumption, that substance should be suspected of being carcinogenic and should be banned from not only foods, but drugs and cosmetics, since, as you know, a wide variety of drugs are now colored. The extent of consumption of drugs in this population I think is very considerable and has been brought out in recent hearings and publications, and as far as cosmetics go, I think it has been established that the colors in lipsticks frequently are swallowed in significant amounts. But how significant remains to be established by further tests.

Mr. DINGELL. Would you say our knowledge is sufficient to determine whether or not these substances, when ingested, will cause cancer over a long period?

Dr. AARON. For some of the colors there is sufficient knowledge. For others, more work is required to be done.

Mr. DINGELL. Thank you very much, Doctor, you have been most helpful.

The CHAIRMAN. Mr. Nelsen?

Mr. NELSEN. Mr. Chairman, in view of the testimony, for example in earlier statements, we have been told that, for example, hens' eggs, milk, beef, soybeans, corn, lettuce, alfalfa, have certain factors in them that create cancer. By that criteria that you cite, would we bar the use of these products? Where do we draw the line? How do we do it?

Dr. AARON. I know the statement has been made, but I would like to see the evidence for the statement. Several months ago a report appeared that feeding hens' eggs to mice caused carcinomas to develop. Now, it is well known that certain strains of mice and rats spontaneously develop carcinomas. When I brought this experiment to the attention of a cancer investigator, he pointed out that there were not adequate controls, that is a population of that species of experimental animal, the rat under study had not been observed parallel with that group of rats that were fed the eggs to determine the incidence of spontaneous development of carcinomas. The susceptibility of various animal species to cancer development varies widely, and it requires a substitute experimentation, a knowledge of the spontaneous evolution of cancers in these animals, to draw conclusions about the effects of certain natural foods on these experimental animals. And so I do not know the facts about these hens' eggs. I do not know the facts upon which were based these other statements about the carcinogenic effects of other natural foods. One would have to examine the specific evidence. And I would not be the person to examine it. Such evidence should be examined by specialists; investigators in cancer.

Mr. NELSEN. Then if in your findings you found, then, that hens' eggs did contribute toward this situation, then according to your statement you then would want to bar the use of hens' eggs?

Dr. AARON. If hens' eggs were known to produce cancer in human beings, I would certainly ask that it be barred, or that whatever element in hens' eggs caused cancer should be excluded.

Mr. NELSEN. Thank you.

The CHAIRMAN. Mr. Rogers.

Mr. ROGERS of Florida. I just want to ask two or three questions, Doctor.

As I understand it now, you were talking about cancer, heart, arthritis and so forth, diseases for which we have about the same scientific knowledge as far as what causes them. I understand you to say that this is true generally.

Dr. AARON. That we are only at the threshold of our knowledge as to the causation.

Mr. ROGERS of Florida. Yes. Now, I notice that in your recommendations you say first that industry must prove the substance they want to add would not be harmful; secondly, that the Food and Drug Administration should be able to set certain tolerances.

Dr. AARON. For toxic.

Mr. ROGERS of Florida. For toxic. But when it comes to cancer alone, then you say, as I understand your statement, you want them to have no discretion at all.

Dr. AARON. No discretion and no tolerance.

Mr. ROGERS of Florida. Yes, and no tolerance. Now, in my mind I wonder if your position is consistent when, for instance we know that heart disease is responsible for more deaths than cancer. Now, you would allow them to set tolerances in those situations, and yet you do not want to have them use any discretion in setting any tolerances when cancer is involved. Now, why is that?

Dr. AARON. Well, heart disease is not caused by toxic materials.

Mr. ROGERS of Florida. Well, we know about materials that cause heart disease, do we not?

Dr. AARON. No.

Mr. ROGERS of Florida. We have no knowledge of any materials that cause heart disease—like fats?

Dr. AARON. We are not certain that fats are the significant factor or what component of fats, whether saturated or unsaturated, nor what quantity. There is a growing body of evidence that suggests that nutrition may be one factor in the evolution of one type of heart disease, arteriosclerosis.

Mr. ROGERS of Florida. I know our doctors here tell us that if the level of cholesterol in the human body gets to a certain point it must be brought down by cutting out fats.

Dr. AARON. If your cholesterol is very high and you have a bad family history of heart disease, it might be a good idea. But the doctor would not do it with great conviction. It might be a good idea to cut down on those foods that influence the cholesterol level.

Mr. ROGERS of Florida. But you do not feel that this has gotten to the point where Food and Drug could act?

Dr. AARON. No, sir.

Mr. ROGERS of Florida. All right, now what about liver diseases? I understand certain foods affect the liver.

Dr. AARON. Yes, certain foods do.

Mr. ROGERS of Florida. Are you going to give them any discretion in that?

Dr. AARON. What foods do you know of that affect the liver?

Mr. ROGERS of Florida. I have just heard testimony here. I presume you heard it, too. Maybe you haven't heard it all along, but I understand——

Dr. AARON. No, I have been here only today.

Mr. ROGERS of Florida. I understand that as you said there were certain foods that would affect the liver. In other words, suppose there is some additive that would affect the liver. Under your proposition here you would allow the Food and Drug Administration to set tolerances for that, and yet when it comes to cancer, then you allow them no discretion. It just seems to me a little inconsistent.

Dr. AARON. No, there is no inconsistency because there is a dose relationship to toxic effects. In other words, if you take one gram of salt, you will get a seasoning. If you take 100 grams of salt, you have a poison.

Mr. ROGERS of Florida. Yes. I understand.

Dr. AARON. But the same relationship does not exist yet with carcinogenic materials. If you have one microgram of a carcinogen, that may be just as dangerous for a significant section of the population as a thousand micrograms.

Mr. DINGELL. Or 10 pounds.

Dr. AARON. Or 10 pounds.

Mr. ROGERS of Florida. Or perhaps if we get to, say, 6 percent of our diet—I understand if you feed 6 percent of a diet of salt to a rat, that that will be toxic.

Dr. AARON. That is right, sure. It depends on the dose in toxic effect.

Mr. ROGERS of Florida. Now, may I go further? We say we haven't been able to really test for cancer on humans in amounts sufficient to get results, and testimony today was that only certain strains of mice and rats were affected by stilbestrol, and many animals were not even affected then. But if we are going to judge everything on the effect it may have on animal, then the salt test certainly would demand that we cut out all salt in our diet because it could be harmful.

Dr. AARON. We have better tests for salt than the results that one sees in experimental animals. Humans have consumed salt, and we know by manipulation of the quantity of salt what effects small and large doses will have, just as we know what effects small and large doses of alcohol will have. But we do not know that there is a distinction between small and large amounts of carcinogenic substances, and it is possible that some day a level can be established, a threshold of tolerance level can be established for a carcinogenic material. It is possible. But when that time occurs, there is no reason why the law cannot be changed.

Mr. ROGERS of Florida. For instance, now you feel that lipstick is in the position where it is harmful, although the testimony was that to get, as I recall, two parts out of a million a woman would have to actually consume approximately 100 lipsticks a day.

Dr. AARON. No. You see, it is impossible to translate dosages in experimental animals to dosages in humans. It may be that one gram of a carcinogen will produce a tumor in a mouse, but it may be only one-tenth of a gram will produce a cancer in a human a hundred times the size of a mouse. There is no relationship between dosage in experimental animals and dosage in humans. This is not my opinion.

Mr. ROGERS of Florida. Yes, I understand.

Dr. AARON. This is the opinion of cancer investigators.

Mr. ROGERS of Florida. If there is no relationship, why are we still using the test that we are making on animals to apply to humans?

Dr. AARON. We are using the tests only qualitatively for carcinogens. That is, once a substance is known to be carcinogenic by a route that is conceivable for humans, that is by ingestion, if it is established that it is carcinogenic, and that effect can be reproduced by other investigators, confirmed by other investigators——

Mr. ROGERS of Florida. Confirmed? How?

Dr. AARON. Confirmed by other investigators in other laboratories, I mean. A single investigator finding a cancer in one animal in a brood does not prove that that substance is carcinogenic. In other words, to establish a single scientific fact, you have to do a number of experiments. They have to be checked, counterchecked and confirmed. Then you have a fact established. When that fact is established, that a chemical produces a cancer in an experimental animal, then that substance should be suspected of being cancerous for humans until proven otherwise.

Mr. ROGERS of Florida. Yes.

Dr. AARON. And we should err on the side of safety.

Mr. ROGERS of Florida. Now, for instance, I believe that in the testimony which you heard today about stilbestrol, and I am just using that as an example, they said that in most of the animals in which it was tested there was no result with cancer, but simply in a highly narrow field where there had been certain breeding. This field was restricted to a very few strains of mice or rats and these were the only animals where cancer developed at all, and no amount of it developed it in other animals.

Now, do you feel that no discretion should be used in cases of this type by the scientists as to whether or not a drug should be used?

Dr. AARON. Of course judgment should be used by the scientist, but we must define what we mean by "scientist." A man who——

Mr. ROGERS of Florida. I presume the tests are conducted by scientists or they would not be any good.

Dr. AARON. Well, there are scientists and scientists.

Mr. ROGERS of Florida. Well, there are doctors and doctors.

Dr. AARON. Exactly, and there are scientists who have a bias and there are scientists who have less of a bias.

Mr. ROGERS of Florida. Yes, I agree, but I am certainly giving them the benefit of the doubt that they are going to try to do what is best.

Dr. AARON. Right.

Mr. ROGERS of Florida. And I am sure that they could determine the biases. It is not very difficult to, and I am sure you and I could. But I think there is an instance where you say even you use stilbestrol because you use judgment.

Dr. AARON. No. I use stilbestrol when the risk of therapeutic gain outweighs the risk of harmful side effects. I am willing to accept the risks of possible cancer if I know it is going to help my patient, and the help to the patient far outweighs the possibility of harmful side effects. But if the risks of side effects including cancer are too great, I will find a substitute for the stilbestrol.

Mr. ROGERS of Florida. Of course that comes down again to a matter of judgment.

Dr. AARON. Precisely.

Mr. ROGERS of Florida. Whether we are willing to, as you say, submit a person to certain risks. I cannot argue with you on that ground. It is up to the doctors to decide and it is not the point of Government, I think, to come in and say, "Doctor, you should not have the right of judgment to use this substance if you feel it will do more good than harm."

Dr. AARON. Right.

Mr. ROGERS of Florida. And we are not asking the Food and Drug Administration to come in and tell you you cannot, because it may be better for humanity that you use it. I am simply saying that even where it has been stated that this would not be harmful, yet you won't give the scientist in FDA the right to make this determination, that because of this amendment which says that even if there is no residue in meat to be eaten, it cannot be used.

Dr. AARON. Oh, not, I did not say if there is no residue it cannot be used.

Mr. ROGERS of Florida. You said the feed could not be used if it contains a carcinogen.

Dr. AARON. The feed?

Mr. ROGERS of Florida. Whatever we would eat or consume, did you not? You do not take that position, then?

Dr. AARON. Oh, yes, I do take the position that any food, drug, or cosmetic containing a substance that has produced cancer in experimental animals should not be used in that food, drug, or cosmetic.

Mr. ROGERS of Florida. That is the point I am making.

Dr. AARON. Yes.

Mr. ROGERS of Florida. Now, feed for animls.

Dr. AARON. Feed for animals, yes.

Mr. ROGERS of Florida. If it has this element in it, you would not want it used under this amendment, is that not true?

Dr. AARON. If it leaves a residue of that carcinogen or potential carcinogen in any part of the food that is consumed.

Mr. ROGERS of Florida. Then you do not want this to just be barred. You want to let them see and set a tolerance.

Dr. AARON. No, sir.

Mr. ROGERS of Florida. You are willing to let them set a certain amount if it leaves no residue, is that your position?

Dr. AARON. I am willing to let them, to allow the Food and Drug Administration to use stilbestrol in animal feeding in an amount that is safe.

Mr. ROGERS of Florida. Where tolerances may be set.

Dr. AARON. Safe for both the animal and for the human that will consume the products of that animal.

Mr. ROGERS of Florida. Yes, and which means there would be no residue.

Dr. AARON. Now, there will be no residue whatsoever of a potential carcinogen.

Mr. ROGERS of Florida. I think we see eye to eye because that is my position, too, that we must set a tolerance, and it must be based on scientific judgment.

I thank the gentleman.

Mr. DINGELL. If the gentleman will yield, that is not what the doctor said at all.

Mr. ROGERS of Florida. I do not mean to be putting words in your mouth. You explain it, then, Doctor. I thought I understood you to say that they may put a certain amount of it in the feed, as long as it is not harmful and the test is whether there is residue in the meat to be eaten by the human. In this case, you have no objection to it?

Dr. AARON. The test is whether it is harmful from the point of view of toxic or carcinogenic effects to the animal and to the human that consumes any part of that animal.

Mr. ROGERS of Florida. And what is the test, whether there is residue in the animal or what?

Dr. AARON. The test for a carcinogen is that there should be zero tolerance in any part of the animal that is consumed by a human.

Mr. ROGERS of Florida. And if there is no residue is that zero tolerance?

Dr. AARON. If there is no residue then there is no residue and there is no need to consider a tolerance.

Mr. ROGERS of Florida. I thought I had understood you to say exactly that.

Dr. AARON. That is right.

Mr. ROGERS of Florida. I did understand the gentleman correctly.

Mr. DINGELL. That happens to be present law, as a matter of fact.

Mr. ROGERS of Florida. I am glad, then, that you are willing to have that apply or continue to apply and change the complete bearing of any judgment in setting of any tolerances which would be done by this amendment. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Younger?

Mr. YOUNGER. I have just one question.

As I understand the present law the manufacturer must furnish the evidence to the Food and Drug as to the product.

Dr. AARON. As to it?

Mr. YOUNGER. As to their product, whether it is safe.

Dr. AARON. Under the food additives amendment?

Mr. YOUNGER. Yes.

Dr. AARON. That is right, sir.

Mr. YOUNGER. All right, who shall furnish the proof about the egg?

Dr. AARON. About the egg?

Mr. YOUNGER. Yes, is that the hen's duty?

Dr. AARON. The chicken, probably.

Mr. YOUNGER. You said you wanted proof.

Now, who is going to furnish the proof?

Dr. AARON. Well, there is no proof that the egg is harmful. I think the burden is on the chicken.

Mr. YOUNGER. That is all, Mr. Chairman.

The CHAIRMAN. Doctor, thank you very much. We appreciate your testimony here.

We have a request from Mr. Fred W. Burrows that he be permitted to file a statement. Mr. Burrows is the executive vice president of the International Apple Association, Inc., 1302 18th Street N.W., Washington, D.C.

Mr. Burrows' statement may be included in the record at this point.

(The statement referred to is as follows:)

INTERNATIONAL APPLE ASSOCIATION, INC.,
Washington, D.C., Febraury 15, 1960.

Subject: Color additive legislation.

Hon. OREN HARRIS,
House Office Building,
Washington, D.C.

DEAR CONGRESSMAN HARRIS: I was scheduled to testify on the proposed color additive legislation (H.R. 7642 and S. 2197) on Thursday, February 11. However, due to a certain development, I relinquished my time.

The reason for my desiring to testify on this proposed legislation was to make one point—and one point only; namely, we strongly urge that the proposed legislation be amended so as to exempt pesticide chemicals from the requirements of the proposed color additive legislation. As you know, a similar exemption for pesticide chemicals was provided in the food additive amendment.

While attending the hearings on Thursday morning, February 11, I learned that a letter from Secretary Flemming had been read into the record the previous day which clearly stated that the definition of the term "color additive" would not include pesticide chemicals and, therefore, these chemicals would not be subject to requirements of the proposed color additive legislation. In view of this letter I felt, at that time, that the legislative history would be clear and therefore gave up my allotted time relative to testimony.

However, I have been giving the matter some further thought and believe it would be advisable that a specific exemption for pesticide chemicals be placed

in the color additive legislation. Certainly there can be no opposition from Health, Education, and Welfare in view of the letter already placed in the record. Also such a specific exemption would leave no doubt in the minds of anyone in the future relative to the status of pesticide chemicals as they might be related to color additives.

Mr. J. A. Noone of the National Agricultural Chemicals Association has already testified before your committee on this matter. He suggested an appropriate amendment concerning pesticide chemicals and the reasons for the exemption.

We strongly urge that your committee adopt the proposed amendment and provide a specific exemption in the color additive legislation for pesticide chemicals.

In any event, we urge that the committee report clearly show that the committee concurs with Secretary Flemming's position as stated in his letter that pesticide chemicals are not color additives. The legislation would be much clearer if the specific exemption were carried in the legislation itself.

Kindest regards.

Sincerely,

FRED W. BURROWS.

The CHAIRMAN. We have a request from Mr. Frank R. Schell, of 1602 Richardson Place, Tampa, Fla. His statement may be included in the record at this point.

(The statement referred to is as follows:)

AFFIDAVIT

COUNTY OF YORK,
Province of Ontario,
Dominion of Canada, ss:

Before me, a notary public in and for the county and Province aforesaid, personally appeared, this 8th day of February A.D. 1960, one Frank R. Schell, who, being first duly sworn deposes and says that he personally prepared the following (hereto attached):

(1) Statement of 20 pages, titled "Statement of Frank R. Schell Before the Committee on Interstate and Foreign Commerce, House of Representatives, in Hearings on H.R. 7624 and S. 2197, January 28, 1960,"
which statement was not presented on January 28, 1960, because the hearings on that day were canceled; and

(2) Letter of six pages, dated February 4, 1960, addressed to Hon. Oren Harris, chairman of that same committee, being a supplemental statement on the same subject matter.

The said Frank R. Schell further swears that he prepared each of said statement and letter for the uses and purposes therein recited; that the statements of facts therein recited are true and correct and the statements made on information and belief are based on information had from persons whom he has heretofore found to be reliable and are verily believed to be truth and fact.

FRANK R. SCHELL.

Sworn and subscribed to before me in the city of Toronto, of the county, Province and Dominion aforesaid, this 8th day of February A.D. 1960.

[SEAL] F. F. CUNNINGHAM,
Notary Public for Ontario.

My commission is for life.

TORONTO, ONTARIO, *February 4, 1960.*

Re H.R. 7624 and S. 2197.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington.

MY DEAR MR. CHAIRMAN: I was scheduled to appear as a witness in the above matter, before the committee, on Thursday, January 28. After arrival in Washington, however, I learned of an emergency situation adverse to our interests here in Canada, requiring my immediate presence. Therefore, when hearings for January 28 were postponed, I went to Mr. Painter and Mr. Williamson, requesting that I be rescheduled for February 10 or 11.

I regret to advise that it has become impossible for me to finish my work here in time to be in Washington on either February 10 or 11. Therefore, I am

enclosing a sworn statement comprehending my previously prepared statement, of which 75 copies were supplied to Mr. Williamson, and am also enclosing the same number of copies of this letter, reciting further comments which seem required by some of the testimony that has been brought in, and I request that my prior statement and this letter and its statements be made a part of the record presented at these hearings as the sworn statements of this witness.

I am particularly concerned with the fact that loose statements are being made that tend to unjustifiably enhance consumer distrust of our food supplies, which distrust, if not corrected, will eventually destroy our agricultural economy. For example, the sale of Florida oranges, as fresh fruit, have been declining for the past 5 years, until, for the season 1958–59, these shipments aggregated less than 9 million boxes out of a total production of some 85 million boxes, as against 14 million boxes utilized as fresh fruit out of a total of 16.5 million boxes produced in 1933–34. A part of this decline is due, of course, to the competition of frozen concentrate but a very large share of the cause of the decline is untrue propaganda re the colors used.

Florida is caught in a pincers. She cannot sell her oranges to advantage without color added, yet consumers are being advised to avoid color added oranges because they bear poisons on their peel. Example: Article in Red Book magazine, December 1958 making that statement. Correspondence with the publishers of that magazine developed the fact that the authors were given their basic material by FDA.

In 1958 an officer of a Canadian fruit importing association made the voluntary statement that Canada's 1956 embargo on color added oranges was solicited and induced by USFDA. Our unloads of fresh oranges in 12 principal Canadian markets, in the 1955–56 season, with color added, aggregated some 658,000 boxes. In 1958–59 without color added, our shipments to those same Canadian cities aggregated some 200,000 boxes.

Again, following an Anticancer Conference in Rome, Italy, in 1956, when considerable talk was had about the possible cancer inducing properties of the coal tar colors, followed by a trip through Europe, particularly Germany, by FDA delegates to the Rome conference, this talk about cancer inducing properties reached such a stage that it finally became necessary for Commissioner Larrick, in a statement read for him by Deputy Commissioner Harvey, at another conference held in London in, I believe, 1958, to make the emphatic statement that no evidence in existence indicated that any certified coal tar color, including those three recently delisted, had any cancer inducing properties.

Nevertheless, primarily as a result of such talk, which had no foundation whatever in truth or scientific fact, Florida's exports of oranges to Great Britain and the Continent have dropped from 1,200,000 boxes to 200,000 boxes during the 1958–59 season, and our new color had not even been approved overseas when I left Florida.

Not being a scientist, I have gone to the record to ascertain what scientists think about this creation of a "scare psychology" in the minds of consumers at home and abroad. The citations below are from "Food Additives Hearings Before a Subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, 85th Congress," held in July and August of 1957 and April 1958.

I find, at page 350 of that transcript, the following statement by Dr. John H. Foulger, M.D., Ph. D. (see his curriculum vitae at p. 308), who was a member of the panel of scientists designated by the National Academy of Sciences at the request of Hon. John Bell Williams, chairman of the subcommittee concerned, to assist the subcommittee on scientific questions:

"I will say as a physician who has studied this problem and from knowing what happens and from what reactions men in our plants show under these same stresses, that the apprehension that is being produced in this country in the last 10 years by scare headlines on the effect of food additives could well have had a more injurious effect upon wide sections of our populace than can any additive in use or any additives which we may think of using."

In his presentment before this committee on January 20, 1960, the Secretary attempted to rationalize his actions re cranberries and poultry by repeated assertions that since no one can tell how little of a substance could induce cancer when consumed over a period of years, FDA would prohibit the sale of any food containing a substance that showed any cancer inducing properties, though fed to test animals at extraordinarily high concentrations, even though the amount of the alleged poisonous substance in said food be infinitesimal.

The Secretary's position seems to have been taken without regard for the scientific facts concerned.

Dr. Maurice H. Seevers, M.D., Ph. D. (curriculum vitae at p. 311 of that transcript), another of that panel of scientists, has this to say at page 338 thereof:

"One of the cardinal principles of toxicology is that every substance has a 'no effect' dose and every substance also has a toxic dose. This is saying in simple words what Dr. Smith has already outlined to you.

"In other words, we can take any compound and dilute it out to a concentration where it may be ingested without any harm whatsoever. We can even do this with radioactivity.

"All of us are exposed to a certain amount of radioactivity regularly, although it is a very low tolerance level. *But there is a tolerance level for every compound, including the so-called carcinogenic agents.*

"*There is no evidence in the literature that chemicals which have been shown to produce cancers in large concentrations in animals are capable of producing these animal cancers at levels used in human foods.* Obviously, if we raise the dose a thousandfold, injury may occur." (Emphasis supplied.)

Dr. Seevers remarks were in accordance with statements by Dr. Howard C. Spencer (p. 345); Dr. Robert Blackwell Smith (p. 334), and Dr. William B. Diechman (p. 335).

I am advised that aminothiazole was found in cranberries in a concentration of one-tenth of one part per million parts of the berries. Ordinarily, the consumer may consume two tablespoonfuls of cranberries—whole, sauce, or jelly—a dozen or so times in a year. The laboratory animals were fed the chemical in concentrations of 10,000 parts per million of their total diet every day of the year for 2 years, i.e., at a ratio of 100,000 times higher than the chemical was found in cranberries.

Significantly, the Secretary's statement was not supported by any evidence as to the effect of the chemical on laboratory test animals when fed at a ratio of 1,000 parts per million in their diet, although this would have been at least the "thousand-fold" increase mentioned by Dr. Seevers. If we are to be scared to death by weird statements as to effects from feeding at high levels, should we be deprived of the consolation of knowing that feeding at low levels produced only a "no effect" result?

I am further advised that Mr. Larrick publicly stated, at a conference with cranberry producers and distributors in Washington, responding to a direct question from the audience, that the ingestion of the amount of aminothiazole found in cranberries could not endanger the health of any person; that Mr. Flemming publicly took issue with his Commissioner of Food and Drugs as to that statement; that when the tapes from three tape recorders when operating were transcribed, that interchange was deleted from all three records.

Secretary Flemming's earlier remarks have been widely interpreted as meaning that he had no choice in the cranberry episode because the law (the Delaney amendment to the 1958 food additives amendment) require such action without regard to the fact that the amount may be harmless. But Mr. Flemming's jurisdiction in the cranberry case is derived from the pesticides act (Miller amendment of 1954 as amended) which does not contain any language similar to the Delaney amendment as found in the 1958 food additive amendment, but, on the contrary, requires the Secretary to establish tolerances for harmless amounts of agricultural chemicals found in foods.

There would seem to be no foundation, therefore, in law or scientific fact for the Secretary's action in ruining the cranberry industry by wide publicity which gave the public to understand that they were "taking a little bite of cancer" whenever they ate cranberries. The subsequent publicity as to "remedial measures" taken could not, of course, offset the injury done by the earlier statements.

I respectfully submit that the foregoing indicates quite clearly the necessity for action by the Congress to insure a modicum of perspective, discretion, and commonsense in the exercise of powers delegated to the Secretary by the Congress, so that the expanding wave of hysteria as regards nonexistent dangers from the consumption of foods may be stopped quickly.

This writer has no interest, other than as a consumer, in the production or sale of cranberries or poultry.

I am sure that many consumers, like myself, would appreciate the committee giving us the "bare-bone facts" as to these things which, allegedly, affect our health. For that reason, we sincerely hope that the committee will call in another panel of scientists, in accordance with the chairman's statement to the Secretary on January 26, to determine the questions of scientific fact in-

volved, then tell the Nation whether there was any justification for the actions of the Secretary which so seriously and irreparably injured the cranberry industry and broke the price of poultry 2 to 3 cents per pound overnight.

Turning, now, to the pending H.R. 7624 and S. 2197: The following are facts which I will be ready, able and willing to support by sworn testimony and written evidence found in a record made by FDA itself over the years, whenever the committee, or a subcommittee appointed for that purpose, has the time available for a full hearing on these facts:

(1) FDA fought the color added process from 1933 until 1937. That effort was ended in 1937 when the Chief of FDA capitulated, then cosponsored amendments to sections 402 (c), 406(a), and 406(b) which amendments were specifically designed—and accepted and sponsored by FDA—to prevent any future interference with the color added process by any denial or certification for colors required for the operation of the process.

As late as October 13, 1952, FDA went on writtten record to the effect that the legislative history of the act precluded any attack on the colors used in the color added process.

(2) There would be no occasion for any legislation, now, as to color additives, had not FDA in 1953, repudiated that 1937 agreement, rewrote the law, by administrative fiat, without authority in law or fact and reversed the construction of the word "harmless" which had obtained since 1907, to wit: "harmless under intended conditions of use," which construction was adopted by the Congress in enacting section 406(b) of the act. In 1953 FDA ruled that the word "harmless" must be construed as meaning "harmless in its most absolute sense of being totally devoid of capacity to cause harm under any conceivable conditions or amounts of usage," changing the effect of section 406(b) in its entirety.

(3) If the Congress should now repeal section 406(b) and enact no other new legislation whatever, all color additives would be subject to the provisions of the 1958 Food Additives Amendment and, under the provisions of section 201(s) of the act, as then amended, would be free from further regulation or interference by FDA, being incontestably "safe under intended conditions of use," that safety being proven by repeated tests by approved scientific procedures and by 52 years of wholly safe usage by the entire population of the United States. On the record, there is no justification for discrimination against our certified food colors which, again on the record, have that safety record which it is hoped that other food additives will attain under testing by the same procedures used for testing color additives in the past and now required for all other additives under the 1958 amendment.

(4) Having now found its unlawful revision of the law, in 1953, to be unworkable, FDA are now before the Congress asking authority to return to that proper construction of the law which obtained from 1907 until 1953, i.e., "harmless under intended conditions of use," and are, in this bill, asking the Congress to delegate to the Secretary a power which the Congress itself does not have, to wit: the power to rule by decree absolute, without any day in court for adversely affected parties and free from any restraint by any court (see sec. 203(d)(2)(A), p. 19 of H.R. 7624, which would authorize the promulgation of such regulations as the Secretary might see fit, "without regard for the requirements of the basic act"—which "requirements" include section 701(e), stating a mandatory right to a hearing before such regulations issue, and section 701(f) giving us an absolute right to a review thereof by the courts after such issuance).

I shall stop over in Washington upon my return to Florida in the next few weeks and will be at the disposal of the committee, at my own expense, for sworn testimony and other evidence available to prove the truth of the foregoing statements.

Respectfully submitted.

FRANK R. SCHELL.

STATEMENT OF FRANK R. SCHELL

Mr. Chairman and distinguished members of the committee, my name is Frank R. Schell. I reside at 1101 South Dakota Avenue, Tampa, Fla., and my office address is 1602 Richardson Place, Tampa, Fla. I have been connected with the citrus industry of Florida since 1925. Until 1946, I was a grower and shipper of citrus fruits, and I am thoroughly acquainted with packinghouse practices, including the process by which a varietal color is imparted to the peel

of mature citrus fruit after the chlorophyll has been blanched out. I am the inventor in fact of the process for coloring citrus fruit known as color added, so named because those words are required to be stamped on the peel of fruit so colored.

The color added process comprises the impregnation of the peel of mature citrus fruit with a certified oil-soluble, water-insoluble food color. Thus a proper oil-soluble food color is indispensable to the process. The color currently used in the process is known as Citrus Red No. 2, which is being certified under the provisions of Public Law 86–2, approved March 17, 1959.

Inasmuch as I have been closely connected with the color added process and the laws and regulations pertaining thereto, since its inception in 1932, particularly the legislative history of the listing and certification of food colors since that time, I am hopeful that my experience may be of some assistance to you in your deliberations on H.R. 7624 and its companion, Senate bill S. 2197. I am indeed grateful to you for having afforded me this opportunity to be heard.

One thing which does not seem to have received any consideration—a limitation on how many times a color must be tested—leaves the whole question of pretesting of color and food additives in a state of well-nigh hopeless confusion.

Section 201(s) of the act, as amended by the 1958 Food Additives Amendment, defines a "food additive" as any substance which "* * * is not generally recognized, among experts qualified by scientific training and experience to evaluate its safety, as having been adequately shown through scientific procedures (or, in the case of a substance used in food prior to January 1, 1958, through either scientific procedures or experience based on common use in food) to be safe under the conditions of its intended use; * * *."

All heretofore certified coal tar food colors are, of course, "food additives" within the meaning of section 201(s), since they are, when applied to oranges, a "component" of the orange and of any product manufactured from the peel of such oranges. The colors likewise "affect the characteristics" of the orange by enhancing the color thereof.

The Secretary explicitly recognizes the fact that these certified food colors are "food additives" under the 1958 amendment by proposing exemption of such colors from that definition (par. (a), lines 6–10, p. 1, of sec. 101 of H.R. 7624). FDA has repeatedly conceded that all of the certified coal tar colors are "safe under the conditions of intended use." (If left in the 1958 act, the certified coal tar food colors, admittedly thus safe, would accordingly be exempted from control by FDA under that particular act.)

It is to be remembered that the certifiable colors have been used for periods of from 10 years (as in the case of violet No. 1), 24 years (as to orange 2 and red 32), and from 22 to 52 years for the other 16 colors. In that period of 52 years of free choice use of certified food colors, there has not been so much as a suggestion that consumption of the certified food colors, "under the conditions of their intended use," has ever adversely affected the health of any person. This has been true without any tolerances or restrictions except the commonsense of housewives and manufacturers, and without even a label warning against excessive use and, as above stated, that safety "under intended conditions of use" has been repeatedly admitted by FDA.

As to the showing of safety by "scientific procedures," all of the certified coal tar food colors admitted to listing prior to 1938 (and this includes all save F.D. & C. yellow No. 2, F.D. & C. orange No. 2, and F.D. & C. red No. 32, admitted in 1939, and F.D. & C. violet No. 1, admitted in 1950) have been tested three different times, as follows:

(1) By competent, disinterested, and highly qualified scientists employed by private, independent testing laboratories, whose reports as to such tests and the results as to each color were filed with FDA along with application for listing.

(2) By the scientists of FDA itself, to such extent as FDA then deemed necessary to substantiate the findings and recommendations of the testing laboratories.

(3) By FDA again, to determine eligibility for listing under authority of the 1938 act, these tests having been begun before enactment of that act and completed before relisting in 1939.

F.D. & C. orange No. 2, and F.D. & C. red No. 32, were likewise tested per (1) and (2) above, FDA's retesting of orange No. 2 having run for 2 years before listing in 1939, and of red 32 for 5 to 6 years (1938–44).

Presumably, violet No. 1 was tested twice, in the same manner, by private testing laboratories and FDA.

Now, gentlemen, we have the statement of Secretary Flemming in his letter of May 29, 1959, to Speaker Rayburn that each of these certified food colors must be tested again, before relisting under H.R. 7624, if enacted, even though each of these colors has been proven "safe under intended conditions of use," by rigorous pretesting by FDA's own scientific procedures, on two and three occasions.

In addition, each color has been proven safe by from 22 to 52 years of free-choice use by the entire population of the Nation, equivalent to 7 billion man-years of testing and by humans—not animals—the most conclusive test known to science, as witness the statement of Dr. Maurice H. Seevers, M.D., Ph. D., chairman, Department of Pharmacology, University of Michigan; and chairman, Section on Experimental Medicine and Therapeutics, American Medical Association, which reads (Hearing Transcript, re Food Additives, 1957–58, p. 403):

"If a negative experiment on man involving a 25-year trial in a whole population (possibly 2.5 billion man-years) is ignored as proof of nontoxicity, what conceivable type of evidence could a pharmacologist or a clinician present in advance of distribution in a food product to be utterly and completely without the possibility of human injury?"

Just when does this testing stop? We have just finished the testing of citrus red No. 2, at a cost of approximately $200,000 for formulation, pretesting and listing. FDA has conceded that the "no effect" level of feeding, for this color, was not less than 1,000 parts per million. Our pharmacologist tells me that, actually, the "no effect" level is right at 4,000 parts per million, the tests at 5,000 parts per million having caused only a very slight edema. Exhaustive tests for cancer produced wholly negative results. FDA and Canadian F. D. Directorate have run their confirming tests and approved its use. It leaves a residue in the peel of 1.0 to 1.136 parts per million, according to FDA. Metabolism and excretion tests showed that 99.9 percent of the color fed to test animals was excreted in the feces and urine. So the amount of this color, as ingested by the consumer of an orange, which here concerns us, is 0.1 percent of 1.0 to 1.136 parts per million. Yet the Secretary may force a retesting. Mr. Larrick has stated that under the provisions of section 203, citrus red No. 2 would be provisionally listed should this bill become public law, but affords us no protection, because it is the provisionally listed colors that can be required to be retested.

This is the point which leaves everything in a state of hopeless confusion: The testing techniques and procedures employed in determining the possible toxicity of certified food colors are the same procedures and techniques contemplated to be used in determining the possible toxicity of all food additives.

If colors that have been tested two and three times by these scientific procedures and techniques, and which have a record of 22 to 52 years of safe use, are still under a cloud, just how many times will each of the proposed food and color addities have to be tested before they are acceptable to FDA—bearing in mind that it is wholly optional and discretionary with the Secretary, under both the 1958 Food Additives Amendment and H.R. 7624, whether he will approve a food or color additive or fix tolerances therefor—and that "the power to fix tolerances at discretion is the power to destroy."

We are of the opinion that the committee should require FDA to clarify their thinking on this point and state it in unmistakable terms, before further consideration is given to their demand for unlimited powers to regulate everything that is ingested by a human being.

We are further of the opinion that if the certified food colors require such retesting, the Secretary should be required to explain the repeated assurances given us that these colors are safe for human consumption under intended conditions of use.

Secretary Arthur S. Flemming in his letter dated May 29, 1959, to Speaker Rayburn, which accompanied H.R. 7624, gave as one of the principal reasons giving rise to the need for this legislation the fact that present statutes pertaining to coal tar colors do not permit the listing of such a color for safe use, as being "harmless," unless tests prove the color to be at zero toxicity. Secretary Flemming pointed out further that unless the law is brought into conformity with modern methods of control by incorporation of the safe-for-use principle, it will become increasingly difficult, and may eventually become impossible, to find permissible colors to supply the demand for various important color uses on the part of consumers as well as the food, drug, and cosmetic industries.

I fully recognize the urgent need for the adoption of the safe-for-use principle in legislation pertaining to the regulation of color and food additives. Never-

theless, as presently written, I am opposed to H.R. 7624 and S. 2197 for the following reasons:

1. The language employed is so vague, verbose, and ambiguous as to be possible of whatever interpretation the Secretary may see fit to place upon any particular word, phrase, sentence or paragraph. For example, the definition of the term "color additive" as stated on pages 2 and 3 of the bill is so written that by a loose construction the ethylene process now employed by the industry could be considered as falling within the purview of the bill.

The ethylene process was developed by Dr. Frank E. Denny, of the U.S. Department of Agriculture. By the use of this method, mature fruit is exposed to a very dilute concentration (1 to 3,000) of pure ethylene in "coloring rooms" for the purpose of accelerating the decomposition of the chlorophyll in the peel. It is the method by which the green coloration of the citrus peel is blanched out. In a notice to growers and shippers of citrus fruits, dated July 16, 1934, the Secretary of the Department of Agriculture stated:

"The ethylene process which has been in use for a number of years does not add any color not normal to the orange but constitutes in effect a kind of blanching process causing the disappearance of the green color (chlorophyll) in the superficial layers of the skin, thereby unmasking the natural yellow to red pigmentation already present. In no case by the use of this process is varietal identity concealed; the effect is one ordinarily produced by natural development. It may be compared to the artifice employed in the blanching of celery stalks."

In a letter dated August 20, 1959, to the Hon. Spessard L. Holland, U.S. Senator from Florida, the Commissioner of Food and Drugs, Mr. George P. Larrick, stated that his agency would not regard ethylene, as used on citrus fruits, as a color additive within the meaning of the proposed bill. Nevertheless, it is respectfully requested that the definition of "color additive" as expressed in the proposed bills be more explicit to clearly show that the ethylene process is not to be construed as a color additive. This request is made because past experience has clearly indicated that the policy of the Food and Drug Administration is subject to change without adequate notice, thus causing irreparable injury to the fruit and vegetable industry. Such changes in policy can be easily achieved where the statute is ambiguous.

2. Perhaps the most serious defect in this bill is that the authority granted to the Secretary is not clearly defined.

Every authorization in the bill is left optional and discretionary with the Secretary, either by the language of the authorization or by succeeding paragraphs. To illustrate, attention is called to section 706, page 6, line 15 through line 11, page 7, where the bill provides that a color additive shall be deemed unsafe unless there is in effect a regulation issued by the Secretary prescribing the conditions under which the additive may be used or unless the use has been exempted by the Secretary..

The foregoing authorization, permitting discretionary action on the part of the Secretary, is qualified by line 23, page 7 through line 2, page 9, where it is stated that the Secretary shall, by regulation, provide for separately listing color additives. However, in the next paragraph, the bill provides that such regulation may list any color additive for use if the Secretary finds such additive is suitable and may be safely employed. Such a provision may, at first blush, seem harmless enough with respect to its effect on the industry. However, the same section provides that the Secretary shall not list a color additive if the Secretary considers the proposed use would promote deception of the consumer. We certainly do not sanction the use of color additives for the purpose of deceiving the consumer. Nonetheless, such language in a bill of this nature gives to an ambitious administrative executive the unlimited power to police the morals of the entire industry.

It will be recalled that in his letter accompanying this proposed legislation, the Secretary urged congressional authorization for the "safe-for-use" principle. We applaud such action by the Secretary. However, it should be noted that the Department has not been consistent in this regard. For a period of over 5 years, the Food and Drug Administration urged the delegation of authority which would give them the power to require a "functional value of benefit to the consumer" as a condition precedent to the approval of any additive for use in food. Congress has rightfully refused to grant the Secretary that power and has made it clear that the Secretary was not to be vested with such powers. This was particularly true with respect to the Food Additives Amendment of 1958, which became Public Law 85-929 on September 6, 1958.

Notwithstanding such expressed intent by the Congress to the contrary, the FDA proposed regulation 121.8 (b) and (c) which appeared in the Federal Register on December 9, 1958, supposedly under the authority of Public Law 85-929, publicly stated that it would not approve any food additive unless the use thereof "will promote honesty and fair dealing in the interest of consumers." When the regulations were promulgated and published in the Federal Register on March 28, 1959, the language was changed, due to strenuous opposition of the proposed language, to read: "A regulation will not be issued allowing the use of a food additive in a food for which a definition and standard of identity is established, *unless its issuance also complies with section 401 of the act*", which, of course, is "a distinction without a difference." [Emphasis supplied.]

Section 401 of the act provides the Secretary with authority to promulgate regulations fixing and establishing a reasonable definition and standard of identity, a reasonable standard of quality and/or reasonable standards of fill of container whenever, in his judgment, such action will "promote honesty and fair dealing in the interest of consumers." There was never any congressional intent that the section should apply to the regulation of food or color additives. Nonetheless, by this regulation, FDA has, in effect, usurped power that was flatly denied them by the Congress. In so doing, FDA is arrogating to itself the power to police the morals of the $70 billion food industry in its entirety. If this very powerful agency can assume such undelegated authority by such strained interpretations of the basic act, what would be the consequences to the food industry if the Secretary was provided with the authority to deny listing of any color he deemed would "promote deception of the consumer". Therefore, I strongly and vigorously oppose the use of such language in the proposed bill.

3. Another very serious defect in the proposed legislation is the absence of any provision that gives industry any recourse against abuse of power by the Secretary except in the event of refusal by the Secretary to list a new color or to fix tolerances therefor. The lack of this necessary protection warrants the very careful consideration of the committee. Whenever any administrative agency is given as much power as the Secretary in this instance requests, provisions should also be included for adequate protection against abuse of that delegated authority.

In 1935, opposing a provision then in the proposed act, whereunder FDA could make multiple seizures of a commodity, throughout the United States, for a simple mislabeling, thereby bankrupting the owner by the cost of defense in each case, Senator Josiah W. Bailey, of North Carolina, uttered a plea which is very pertinent here:

"There may be need for bureaus in our Government; I would not deny that. There must be an executive department. The laws we make must be administered. But if in making the laws the Members of the Congress do not guard the rights of the people against administrators of the law who are not responsible to the people, then we not only neglect our duty, but we will reach in logical order the position in which we are responsible for what they do. I do not have to answer so much for the acts of Congress as I do for the conduct of men who administer the laws for which I vote, under which there were brought here people who could not understand what had been done to them or why.

"Mr. President, I lay down a simple principle. Assuming that we ought to have bureaus and must have administrators, and knowing that the executive department must be independent under the Constitution and ought to be under all the sanctions of experience, once we make the law, knowing that it passes into the hands of the administrator, loyalty to ourselves, to our country, and to the constituents who must live under the law, makes it our duty to see to it that the law under which they must live shall be administered within bounds to accomplish the intent and purpose of the law; that and no more.

* * * * * * *

"Mr. President, I make my point. Here is this proposed legislation, which affects the entire population and has a relation to commerce involving billions of dollars, touching hundreds and thousands of stores, going into every dining room and every pantry, permeating the national life as few laws we could pass here would—incomparably more personal in its application than any legislation we have had before us since I have been in the Congress. I beg you, when we propose to enact a law as far reaching as that, that we shsall at the same time lay the restraining hand upon those who have the power to frame and issue the regulations in order that you and I may not be called upon to answer for deeds of which we never conceived; in order that there may be a law in the United

States and that the American people may know it; in order that the rights of a great population may be protected by the ancient standards under which laws have been made from the day of Moses to the present hour, not in little cubby-holes down in some department, but from the high mount where laws should be given, and on the tablets of stone."

In this connection, I respectfully request the attention of the committee to other remarks of Dr. Seevers (at pp. 401–406, "Transcript of Hearing re Food Additives," 85th Congress) and to the remarks below of the late Mr. Charles Wesley Dunn, at page 70 of that transcript:

"After the hearing is completed the administrator must publish a final order in point, which must be based on substantial evidence of record, and state the findings of fact on which it is based. We suggest that this administrative review plan be revised expressly to provide, which it does not now provide, that the hearing examiner shall be appointed in each instance as provided by the Administrative Procedure Act, and shall have the functions prescribed by that act, *in order that the hearing may be a truly fair and impartial one*, as is done under the Federal Trade Commission Act, for example.

"This revision has great industrial importance. For *the foregoing situation does not obtain where the hearing examiner is an attorney of the FDA, which has previously decided the issues against the person initiating the hearing.*" (Emphasis supplied.)

Mr. Dunn's testimony was followed by the testimony of Hon. John Biggs, Jr., chief judge of the third judicial circuit commenting (transcript 240) on the attitude of litigants in his court, as

"* * * a rather disinclination to accept the finding of the administrative agency.

"They seem to lack confidence in the agency's, to put it bluntly, impartiality."

Judge Biggs then went on to say (transcript 241):

"Now this problem could be solved, gentlemen, by rather drastic methods. I have some hesitancy in suggesting it. *The reason that this malaise or unease is felt in respect to agency decisions*—and, mind you, I am casting no aspersions on the agencies, I want to make that perfectly clear, for I think their decisions are just and carefully reasoned and skillful—*is that they are made by agencies which, of course, act, in a sense, as prosecuting officers and also as judges.*

* * * * * * *

"*The solution would be*, of course, to create a deciding body which had no connection with the agency, and then you would have a quasi-judicial tribunal, or *a tribunal making quasi-judicial decisions, which, in effect, and which, in fact, would have no connection with the agency itself. That is the only way you can do it.*" (Emphasis supplied.)

To all of which this witness echoes a devout "Amen".

4. My fourth objection concerns section 203, which, in my opinion, is objectionable in its entirety.

The first two lines of section 203(d)(2)(A) (p. 19) provides that the Secretary shall, from time to time, issue, amend, or repeal regulations without regard to the requirements of the basic act. Insofar as it concerns any certified food color ever listed to the date of enactment of the bill, section 203(d)(2)(A) gives the Secretary the power to promulgate such regulations as he may see fit, without permitting any adversely affected party either a prior hearing or any right of court review after the issuance of the regulation, since sections 701(e), requiring a hearing, and 701(f), requiring judicial review, could be disregarded. It is my opinion that by including this provision in this proposed bill, the Secretary clearly sets forth an ambitious plea for unwarranted powers that would create an absolute dictatorship over the entire food, drug, and cosmetic industries, since no dictator in history ever enjoyed a greater power than that of ruling by decree absolute, free from any judicial restraint.

Mr. Chairman, even though past experience has shown it to be almost futile to appear in opposition to a regulation proposed by the Secretary, that right must at least be preserved.

Since, as heretofore shown, all certified colors have an incontestable record of safety and pretesting, there is no occasion whatever for "provisionally listing" these colors for further unnecessary testing.

Turning, now, to the suggestion as to amendments to the present laws, required by the December 15, 1958, decision of the Supreme Court, which suggestions you will find attached as exhibit A to this statement:

Section 1 and section 2 (a) and (b) of exhibit A are intended to exempt the use of the ethylene process as a degreening or ripening agent from the purview of, respectively,

(a) The Federal Insecticide, Fungicide and Rodenticide Act, as amended by Public Law 86–139; and

(b) The 1958 Food Additives Amendment.

Ethylene is a substance so free of possible injury to human health that it is used as an anesthetic in cases where physicians and surgeons are afraid to use ether or chloroform.

We have heretofore quoted (supra, p. 8) the official ruling of Secretary of Agriculture Wallace, dated July 16, 1934, re use of the ethylene process as a "degreening" agent for citrus, showing that it adds nothing to the fruit, but merely stimulates the operation of the natural metabolic processes of the fruit itself. It merely brings about a result natural to the fruit in a shorter period of time.

It has been used since 2,000 years before Christ as a ripening agent for fruits in those cases, only, where ripening involves a conversion of starches into fruit sugar, by thus stimulating the natural metabolic processes. It does not serve to accelerate the ripening of citrus because there is no starch in citrus fruit at any stage of growth.

Ethylene is completely incapable of posing any possibility of injury to human health. There has never been any suggestion that its use may work a fraud upon the consumer. No public interest can be served by vesting FDA with powers to supervise and regulate the use of a substance that has been used for so many years with a complete absence of injurious effect upon public health or interest.

Section 2(c) of exhibit A defines organic chemical colors in terms that comprehend all colors, of whatever kind and from whatever sources. It substantially tracks the language of FDA's proposed definition (pp. 2 and 3 of H.R. 7624) but omits language that would comprehend ethylene, or other unsaturated hydrocarbons having a like effect.

Section 3 amends section 401 of the act so as to eliminate all reference to promoting "honesty and fair dealing in the interest of the consumer," as heretofore discussed (supra, p. 11).

Believing, with the Congress, that FDA will have enough to do if the activities of the agency are limited to insuring the safety of food additives, leaving other factors, especially this proposed policing of the morals of the $70 billion food industry, to the decision of the marketplace, this amendment was drafted to relieve FDA of any responsibility for those morals.

"The act is not concerned with the purification of the stream of commerce, in the abstract. The problem is a practical one of consumer protection, not dialectics." (*United States* v. *Urbuteit*, 335 U.S. 355, 357–358).

Our principal objection is, of course, that, unless this amendment is enacted, FDA can stop the use of any organic chemical color, or any food additive, by merely amending their regulation 121.8, inserting the two words "or color" so that paragraph (c) will then read: "A regulation will not be issued allowing the use of a food or color additive," etc., thereafter refusing the listing of needed colors, or establishment of tolerances therefor, on no other or better grounds than FDA's prejudiced belief that such use, or fixing such tolerance, "will not promote honesty and fair dealing in the interest of the consumer."

Section 4 relates to a purely formal amendment to section 402(c).

Section 5 is a revision of section 406(b) to meet the situation presented by the Supreme Court's decision of December 15, 1958: We respectfully submit our considered opinion that it gives the Secretary every power that is needed for protection of the public health. At the same time, the Secretary is required to do those things that are necessary for the preservation of the entirely harmless and legitimate coloring practices of the color-using industries. It covers each of the principal points recited by the Secretary in his letter of May 29, 1959, to Speaker Rayburn, as requiring enactment of this legislation, to wit:

It authorizes and directs the Secretary to:

(*a*) List all organic chemical colors which have been proven to be safe for use, or human consumption, under conditions of intended use in or on foods, drugs, and cosmetics; and

(*b*) To relist all previously listed organic chemical colors that have been delisted, when proven safe for use for human consumption under the conditions of intended use in or on foods, drugs, or cosmetics; and

(*c*) The establishment of reasonable tolerances for the use of all of such organic chemical colors in or on foods, drugs, and cosmetics, when, as and to the extent necessary for the protection of public health; and

(*d*) To certify batches of such organic chemical colors, when and if deemed necessary, with or without diluents of like safety.

Sections 6 and 7 are amendments required for necessary language or reference corrections.

We respectfully submit that no more than the foregoing amendments are necessary. They are couched in direct language, easily understood and difficult to misinterpret. Certainly we do not need to add to the confusion in our laws today this 21 pages of circumlocution which is H.R. 7624.

Finally, Mr. Chairman and gentlemen of the committee, because this legislation will directly affect, for good or evil, more than a hundred thousand American families who are directly dependent upon the citrus industry of the United States for their daily bread, I venture to voice the hope and belief, felt by so many of us, that when you have concluded your deliberations we can all say, as was said of the 1938 act, in amended Senate Report No. 91, March 8, 1937:

"This bill has been prepared with three basic principles in mind: First, it must not weaken the existing laws; second, it must strengthen and extend that law's protection of the consumer; and, *third, it must impose on honest industrial enterprise no hardship which is unnecessary or unjustified in the public interest.*

* * * * * * *

"* * * And it is a fair bill which will enable honest business to be carried *on without interference, except such as is necessary to safeguard the public health.*" [Emphasis suplied.]

I thank you all.

FRANK R. SCHELL,
Tampa, Fla., January 20, 1960.

SUGGESTED AMENDMENT TO FOOD, DRUG, AND COSMETIC ACT

The 1938 Food, Drug, and Cosmetic Act is hereby amended in the following particulars:

Section 1: Section 2 of the Federal Insecticide, Fungicide, and Rodenticide Act (61 Stat. 163; 7 U.S.C. 135–135k) as amended by the Nematocide, Defoliant, and Desiccant Amendment of 1959, Public Law 86–139, is further amended so that subsection "h" thereof will read as follows:

"h. The term 'plant regulator' means any substance or mixture of substances (other than unsaturated hydrocarbon gasses or mixtures whereof any of such gasses are a part) intended, through physiological action, for accelerating or retarding the arte of growth or rate of maturation, or for otherwise altering the behavior of ornamental or crop plants or the produce thereof, but shall not include substances to the extent that they are intended as plant nutrients, trace elements, nutritional chemicals, plant inoculants, and soil amendments."

Section 2: Section 201, as amended, of the Federal Food, Drug, and Cosmetic Act is further amended as follows:

"(a) Paragraph (s) of such section (defining the term 'food additive') is amended by redesignating clause (3) as clause (5) and by inserting immediately before clause (5), as so redesignated, the following new clauses:

"(3) An organic chemical color, or

"(4) An unsaturated hydrocarbon gas:"

"(b) Paragraph '(t)' of such section is dedesignated and otherwise amended to read as follows:

"(u) The term 'safe' as used in paragraph (s) of this section and in section 406(b) has reference to the health of man or animal."

"(c) Section 201 is further amended by inserting, immediately after paragraph '(s)' thereof, the following new paragraph:

"(t) (1) The term 'organic chemical color' means a material which is made by a process of synthesis or similar artifice, or is otherwise derived, with or without intermediate or final change of identity, from any animal, vegetable, petroleum, coal tar, or other mineral sources, and, when added or applied to a food, drug, or cosmetic, or to the human body or any part thereof, is capable of imparting color thereto; except that such term does not include any material which the Secretary by regulation, determines is used (or intended to be used) solely for a purpose or purposes other than coloring.

"(2) The term 'color' includes black, white, and intermediate grays."

Section 3: Section 401 of the act is amended to read as follows:

"SEC. 401 (a). Whenever such action is necessary to insure a reasonable standard of quality or fill of container, the Secretary shall promulgate regulations fixing and establishing for any food (other than fresh or dried fruits or fresh or dried vegetables, or butter) under its common or usual name so far as practicable, a reasonable definition and standard of identity, a reasonable standard of quality and a reasonable fill of container, either or all. In the prescribing of any standard of quality or fill of container for any canned fruit or canned vegetable, consideration shall be given to and due allowance made for the differing characteristics of the several varieties of such fruits or vegetables. In prescribing a definition and standard of identity for any food or class of food in which optional ingredients are included, the Secretary shall designate the optional ingredients (including any 'food additive' or 'organic chemical color' as defined in section 201, which is safe for use under the conditions of its intended use) and such optional ingredients shall be named on the label.

"(b) The Secretary is further authorized to establish, by regulation, a reasonable definition and standard of identity for fresh avocados, cantaloups, citrus fruits, or melons, but such definitions and standards shall relate only to maturity and the effects of freezing.

"(c) Nothing in this section shall be construed as authorizing any restriction upon the use in or on any food of any food additive or any organic chemical color which is safe for use or consumption by man under the conditions of intended use thereof."

Section 4: Section 402(c) of the 1938 act is hereby amended to read:

"402(c). If it bears or contains an organic chemical color, other than one that has been listed (and from a batch that has been certified, if so required) pursuant to regulations as provided by section 406 (b)."

Section 5: Section 406(b) is hereby amended to read as follows:

"SEC. 406(b). The Secretary shall without delay promulgate regulations providing for: (1) The listing of organic chemical colors (as defined in section 201(t)(1) as amended) including any colors formerly listed as 'harmless and suitable for use' in foods, drugs, or cosmetics, but since delisted, when such organic chemical colors have been shown by appropriate scientific procedures to be safe for human consumption, or use, when consumed or used in the amounts and under the conditions of their intended use in or on a particular food, drug, or cosmetic, or either or all thereof, such listing to designate the intended use of each such organic chemical color; (2) the establishment of reasonable maximum limitations of permitted use (tolerances) of such organic chemical colors in or on foods, drugs, or cosmetics, when, as and to the extent necessary for the protection of public health; and (3) for the certification of batches of such organic chemical colors (with or without diluents of like safety) whenever such certification is necessary for the protection of public health."

Section 6: Sections 504 ("Certification of Coal Tar Colors for Drugs") and 604 ("Certification of Coal Tar Colors for Cosmetics") of the 1938 act are hereby repealed. Wherever in the act, as amended, reference is made to section 504 or 604, such reference is amended to read "section 406(b)."

Section 706 is amended by substituting the words "Organic chemical colors" for the words "Coal tar colors."

Respectfully submitted.

FRANK R. SCHELL.

The CHAIRMAN. We have a request from the Proprietary Association, James A. Merritt, secretary. He may file a statement for the record and it may be included at this point.

(The statement referred to is as follows:)

STATEMENT BY THE PROPRIETARY ASSOCIATION, WASHINGTON, D.C.

The Proprietary Association, a 79-year-old national association of manufacturers of proprietary medicines, is an unincorporated association with headquarters at 810 18th Street NW., Washington, D.C.

Proprietary medicines, as manufactured by the members of this association, are medicines which are fully compounded, completely packaged and labeled with adequate directions for use, subject to the provisions of the Federal Food,

Drug, and Cosmetic Act, identified by and sold under a trademark or other trade symbol and sold and advertised direct to the general public.

The manufacturers of these products are interested in and would be affected by the legislation proposed in S. 2197 and H.R. 7624. Numerous of the manufacturers use "color additives" as defined in these bills in the making of their products.

The amendments suggested herein are addressed to the Senate bill S. 2197 on the assumption that that bill having passed the Senate in the 1st session of the 86th Congress, may be the basis for first consideration by the House committee.

This association endorses the suggested amendments which have been presented on behalf of the Pharmaceutical Manufacturers Association in a statement dated February 8, 1960, by John K, Worley, Esq., general counsel to the association, and concurs in the reasons therefor as set forth in said statement. Accordingly, it is respectfully requested that this committee give consideration and favorable action to the following suggested amendments to the Senate bill:

S. 2197

1. On page 3, line 3—proposed section 201(t)(1)(B), should be amended so as to read as follows: "is added or applied to a food, drug, or cosmetic, or to the human body or any part thereof, primarily for the purpose of imparting color thereto".

2. On page 3, line 7—proposed section 201(t)(1), should be amended by the addition thereto of a new subparagraph (C) as follows:

"(C) and except that such term does not include any material which is generally recognized, among experts qualified by scientific training and experience to evaluate its safety, as having been adequately shown through scientific procedures, or experience based on common use, to be safe under the conditions of its intended use when added or applied to a food, drug, or cosmetic or to the human body or any part thereof."

3. On page 11, line 3—proposed section 706(b)(7), should be deleted. This is language from the food additive law, which has no place in a color additive law.

4. On pages 11 and 12—proposed section 706(b)(8), should be amended so as to read as follows:

"(8) If, having regard to the aggregate quantity of color additive likely to be consumed in the diet or to be applied to the human body, the Secretary finds that the data before him fail to show that it would be safe and otherwise permissible to list a color additive (or pharmacologically related color additives) for all the uses proposed therefor and at the levels of concentration proposed, the Secretary shall, in determining for which use or uses such additive (or such related additives) shall be listed, or how the aggregate allowable safe tolerance for such additive or additives shall be allocated by him among the uses for which such additives have not already been listed, take into account, among other relevant factors (and subject to the paramount criterion of safety), (A) the relative aggregate amounts of such color additive which he estimates would be consumed in the diet or applied to the human body by reason of the various uses and levels of concentration proposed; and (B) the availability, if any, of other color additives safe for one or more of the uses proposed."

5. On pages 15 and 16—section 203(a)(1), should be amended as follows: In lines 2 and 3 on page 16 delete "(including a deemed provisional listing)". This change is required by the deletion requested in item 8.

6. (*a*) On page 16, section 203(a)(2), should be amended by deleting in lines 13, and 14, on page 16 the following: "(or deemed provisional listing)" and by deleting in lines 19 and 20: "(or deemed provisional listing)".

(*b*) On page 19, section 203(d)(1)(E) should be amended as follows: On page 19, in line 20, delete "(or deemed provisional listing)". These changes are required by the deletion requested in item 8.

7. On page 19, section 203(d)(2)(A), should be deleted.

8. On page 20, section 203(d)(3), should be deleted.

H.R. 7624

This bill contains a provision which does not appear in S. 2197. It is frequently referred to as the "Delaney clause." It is section 706(b)(5)(B) on page 10 of H.R. 7624. If a provision on the subject is determined upon by your committee, it is respectfully requested that the provision in H.R. 7624 be amended so as to read as follows:

"(B) A color additive (i) shall be deemed unsafe, and shall not listed for any use which will or may result in ingestion of all or part of such additive, if the additive is found to induce cancer when ingested by man or animal in an amount and under conditions reasonably related to the intended use, or if it is found, after tests which are appropriate for the evaluation of the safety of the additive for its intended use, to induce cancer in man or animal, and (ii) shall be deemed unsafe, and shall not be listed, for any use which will not result in ingestion of any part of such additive if, after tests which are appropriate for the evaluation of the safety of additives for such use, or after other relevant exposure of man or animal to such additives, it is found to induce cancer in man or animal".

CONCLUSION

The Proprietary Association is appreciative of the committee's consideration. If the foregoing amendments—or the substance of them—are adopted, the members of this association will endorse and support the legislation.

This statement has been duly authorized by the association's officers and appropriate committee.

The CHAIRMAN. Commissioner George B. Larrick has submitted a letter together with a report, I assume, for the record. This will go along with his statement during the early part of these hearings.

When Dr. Carney was testifying he submitted a file of materials by Smith Kline & French Laboratories which apparently consists of various and sundry letters. This will be received for the files of the committee.

Dr. CARNEY. I did not submit that, Mr. Chairman. It is not mine, no, sir.

The CHAIRMAN. Does anybody know the identity of this? There seems to be no identification as to whom it belongs, but there are innumerable letters from doctors here. Dr. Carney, you did submit for the committee's use this display, did you not?

Dr. CARNEY. No. That also is Mr. Worley's.

The CHAIRMAN. I did not understand, Doctor, while you were testifying, if you asked that this memorandum or report on the safety of stilbestrol——

Dr. CARNEY. That I submitted for your consideration, yes, sir.

The CHAIRMAN. Let it go in the record just after Dr. Carney's statement in view of the fact that we have other reports on it. I believe that is all the requests we have at this time, so the committee will adjourn the hearing subject to the call of the Chair.

(Whereupon, at 4:20 p.m., the committee adjourned subject to the call of the Chair.)

COLOR ADDITIVES

FRIDAY, MARCH 11, 1960

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The committee met, pursuant to call, at 10 a.m., in room 1334, New House Office Building, Hon. Oren Harris (chairman of the committee) presiding.

Present: Representatives Oren Harris (presiding), Moulder, Staggers, Friedel, Rhodes, Jarman, O'Brien, Dingell, Rogers of Florida, Hemphill, Brock, Schenck, Younger, Avery, Glenn, Nelsen, Keith, and Curtin.

Also present: W. E. Williamson, chief clerk.

The CHAIRMAN. The committee will come to order.

This morning the committee resumes hearings on H.R. 7624 and S. 2197, referred to as the color additives amendment to the Federal Food, Drug, and Cosmetic Act. We have held rather extensive hearings in the past in which the Secretary of Health, Education, and Welfare and his staff have testified, as well as representatives of various and sundry groups interested in this particular matter, and Members of the Congress.

Today we are pleased to have Dr. M. R. Clarkson, Associate Administrator of the Agricultural Research Service of the U.S. Department of Agriculture, who will present the views of the Department on these proposed color additives bills.

Dr. Clarkson is appearing here by the direction of the Secretary of Agriculture pursuant to an invitation from me as chairman to the Department to comment on these proposals.

Dr. Clarkson, we are glad to welcome you to the committee, and I think before you start, it might be advisable for the record to identify your associates.

Mr. CLARKSON. Thank you, Mr. Chairman.

On my left is Dr. T. C. Byerly, the Deputy Administrator of the Agricultural Research Service for Farm Research; and on my right is Dr. W. L. Popham, who is the Deputy Administrator of the Agricultural Research Service in charge of regulatory programs.

Mr. Chairman, there are several other representatives of the Department here who may be called on to answer specific questions. Would you like to have them introduced at this time, also?

The CHAIRMAN. Yes, I think that information should be supplied for the record, Doctor.

Mr. CLARKSON. We have Dr. H. L. Haller, Assistant to the Administrator; Dr. A. R. Miller, Director of the Meat Inspection Division; Mr. Justus C. Ward, Chief of the Pesticide Regulations Branch,

Plant Pest Control Division; Mr. Carl R. Bullock, Director of the General Regulatory Division of the Office of General Counsel; and Mr. S. P. Lejko, Assistant to the Administrator.

The CHAIRMAN. Off the record.

(Discussion off the record.)

The CHAIRMAN. You may proceed.

STATEMENT OF M. R. CLARKSON, ASSOCIATE ADMINISTRATOR, AGRICULTURAL RESEARCH SERVICE, DEPARTMENT OF AGRICULTURE; ACCOMPANIED BY T. C. BYERLY, DEPUTY ADMINISTRATOR, FARM RESEARCH; W. L. POPHAM, DEPUTY ADMINISTRATOR, CROPS REGULATORY PROGRAMS; H. L. HALLER, ASSISTANT TO THE ADMINISTRATOR; S. P. LEJKO, ASSISTANT TO THE ADMINISTRATOR; A. R. MILLER, DIRECTOR, MEAT INSPECTION DIVISION; JUSTUS C. WARD, CHIEF, PESTICIDE REGULATIONS BRANCH, PLANT PEST CONTROL DIVISION; AND CARL R. BULLOCK, DIRECTOR, GENERAL REGULATORY DIVISION, OFFICE OF GENERAL COUNSEL

Mr. CLARKSON. Mr. Chairman and members of the committee, thank you for the invitation extended to the Department of Agriculture to discuss legislation pending before your committee to amend the Federal Food, Drug, and Cosmetic Act in regard to color additives, as contained in H.R. 7624 and S. 2197.

The Department's position H.R. 7624, offering no objection to the proposed legislation, was transmitted to the committee on August 11, 1959. The Department was not requested to file a report on S. 2197 while that bill was pending in the Senate.

The Department has made a thorough review of the impact that both of these bills might have on agricultural practices and upon the activities of the Department of Agriculture in the light of the information previously presented to your committee and the discussions that have taken place during recent hearings.

The Department believes that legislation on color additives is necessary and would be in the public interest. We support the broad objectives of H.R. 7624 and S. 2197 to provide safeguards for the health of our people—a matter of first importance.

The purpose of these bills is to provide a scientifically sound basis for listing the colors that may be safely used in foods, feeds, drugs, and cosmetics and to provide for other safeguards in the use of such colors including where necessary appropriate tolerance limitations on the amount of color that may be used.

The bills also would provide for a continuation of the present system of certifying the safety of individual batches of the so-called coal tar colors and would extend this system where necessary to natural colors not now covered by the certification system.

As we understand it, the legislative proposals are generally in accord with requests transmitted to the Congress by the Department of Health, Education, and Welfare which is responsible for administration of the Food, Drug, and Cosmetic Act, except that that Department has recommended the inclusion of a proviso dealing especially with color additives which may be carcinogenic.

S. 2197 contains several amendments which were, as we understand it, inserted by the Committee on Labor and Public Welfare and agreeable to the Department of Health, Education, and Welfare. The Senate bill as amended is acceptable to the Department of Agriculture subject to the following comments.

In view of the very broad scope of the definition of the term "color additive" it should be made clear that the incidental effect on the development of color in foods or feeds resulting from the appropriate use of plant nutrients, either organic or chemical, or the appropriate use of pesticides and other agricultural chemicals is not included within the definition. The appropriate use of pesticide chemicals is, of course, closely regulated under the pesticide chemicals amendment of the Food, Drug, and Cosmetic Act and the Federal Insecticide, Fungicide, and Rodenticide Act, which is administered by the Department of Agriculture. It would be disrupting and confusing to require a further clearance of pesticide chemicals because of an incidental effect upon the development of color in agricultural products.

Some plant regulators which are used for the control of undesirable growth of plants and for preventing premature drop of fruits have some effect on the color development of the crops.

Appropriate soil fertility has a marked effect upon the desirable development of color in certain fruits and vegetables. The normal development of the red surface color and the yellow ground color of apples is related to the nitrogen level of the tree at harvest time. The availability to the tree of potassium, an essential plant nutrient and a common constituent of fertilizers, has a noticeable effect upon the color of the fruit. Experiments have shown that appropriate levels of both nitrogen and potassium contribute to improved fruit color as well as to the general health and growth of the tree.

Peas grown in soil containing adequate levels of potassium are of better coloration and better cooking quality than are peas grown in soils without adequate levels of this fertilizer. The same is true in regard to the normal coloration of cabbage, kale, brussels sprouts, cauliflower, tomatoes, and radishes.

These usages with only incidental color effects should not be handled in the same manner as the addition of a dye or a pigment to food. The legislative record should be clear on this point. If necessary to accomplish the purpose, it is suggested that some additional language be included, such as the following:

Amend section 101 of S. 2197 by adding before the period on line 10 of page 3:

or any soil or plant nutrient or any material subject to registration under the Federal Insecticide, Fungicide, and Rodenticide Act.

Mr. Chairman, we have been in discussion with representatives of the Department of Health, Education, and Welfare on this matter, and I am able to say that we are in agreement as to the objectives. We have still some discussions underway as to the precise language, and we would like the opportunity to offer an amendment to this language later, if that should be mutually agreed upon.

The CHAIRMAN. Yes, I think, Doctor, you will find also that some of the other witnesses offered amendments or language along this line that you might want to take a look at, too.

Mr. CLARKSON. Yes, sir.

Legal responsibility for insuring the safety and wholesomeness of the national food supply is shared on the Federal level by the Department of Agriculture and the Department of Health, Education, and Welfare.

General responsibility in regard to safety of food for man and feed for livestock and poultry is vested in the Department of Health, Education, and Welfare under the terms of the Food, Drug, and Cosmetic Act, as amended. Other regulatory acts, such as those governing foreign quarantine to prevent the introduction from abroad of human diseases and the licensing of biological products for human use, are also administered by HEW.

The Department of Agriculture, in addition to its overall responsibilities for the food supply of the Nation, is responsible for the safety and wholesomeness of meats and poultry products moving in interstate and foreign commerce under the provisions of the Meat Inspection Act and the Poultry Products Inspection Act. The Department of Agriculture also is responsible for administration of the licensing of veterinary biologics for use in the prevention and treatment of diseases of animals and poultry and for the administration of the Federal Insecticide, Fungicide, and Rodenticide Act.

The two Federal departments work together in determining and evaluating the safe use of chemicals by farmers, processors, and distributors of food products. If chemicals are not properly used and foods are found to be contaminated by chemicals, or are found to be otherwise unsafe or unfit for consumption, the Food and Drug Administration of the Department of Health, Education, and Welfare, and the meat and poultry inspection services of the Department of Agriculture seize or condemn the products under their respective jurisdictions.

The Department of Agriculture conducts comprehensive inspection operations with respect to meats and poultry products, including preclearance inspection of all carcasses, meats, and poultry products and the approval or rejection of all additives including chemicals and colors. This is done under regulations issued by the Secretary of Agriculture as circumstances and the advance of knowledge require, to assure that the products marked "Inspected and passed" are sound, healthful, wholesome, fit for human food, and truthfully labeled.

An example of the interrelationship of the two activities may be found in the case of meat or poultry which had been inspected and passed by the Department of Agriculture and found to be safe, wholesome, free of adulteration, properly labeled in conformity with the meat or poultry inspection laws, and in every way eligible for interstate and foreign commerce.

If, however, spoilage or adulteration or mislabeling occurs after the product leaves the inspected establishment, then the provisions of the Food, Drug, and Cosmetic Act apply to the product. When seizure is effected by the Food and Drug Administration, usually the product is returned to the jurisdiction of the meat or poultry inspection service for appropriate handling.

Under the Meat Inspection Act color additives are permitted in meat fat shortenings and on the surface of products in casings with appropriate marking and labeling and with control of the manner of application. Only those materials approved by the Director of the Meat

Inspection Division may be used and with regard to coal tar dyes, the regulations limit such use as follows:

coal tax dyes upon certification by the manufacturer, and the furnishing of authoritative evidence to the inspector in charge, that the dyes are certified under the Federal Food, Drug, and Cosmetic Act for use in connection with foods.

The legislative history of the food additives amendment to the Food, Drug, and Cosmetic Act clearly indicates the congressional intent that nothing in that act is intended to in any way impair the authority and responsibility of the Secretary of Agriculture with regard to meats and poultry products.

The provisions of paragraph 902(b) of the Federal, Food, Drug, and Cosmetic Act and of section 18(a) of the Poultry Products Inspection Act are also clear with respect to the authority of the Secretary of Agriculture.

However, in order to avoid difficulties that might otherwise arise in administration of the legislation before the committee, it is suggested that section 204 of S. 2197 be amended to read as follows:

SEC. 204. Nothing in this act shall be construed to affect in any way the provisions of section 902(b) of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 392) or section 18 of the Poultry Products Inspection Act (21 U.S.C. 467), or to exempt any meat or meat food product, or poultry or poultry product, or any person from any requirement imposed by or pursuant to the Meat Inspection Act of March 4, 1907 (34 Stat. 1260), as amended or extended (21 U.S.C. 71 and the following), or the Poultry Products Inspection Act (21 U.S.C. 451 and the following).

This proposal, Mr. Chairman, is intended to preserve the existing relationships between the Food, Drug, and Cosmetic Act and the Meat Inspection Act and the Poultry Products Inspection Act.

These comments and recommendations pertaining to S. 2197 also apply to H.R. 7624. In addition, with respect to the House bill, careful consideration should be given to the provisions of the so-called anticancer clause.

We understand that the committee has before it several suggestions for changes in the wording of this clause, including the suggestions of the Department of Health, Education, and Welfare. The chairman has indicated the intention of your committee to make a full review of the various proposals. Also, the executive branch is making a study of this matter in order to develop recommendations that will provide for the exercise of sound scientific judgment to the full extent that current knowledge of the subject makes this feasible and consistent with protection of the public health.

In view of the importance of this subject, the Department would prefer to delay making any recommendation with reference to it until there has been opportunity to consider the matter further in the light of the facts developed by these studies.

The Food and Drug Administration of the Department of Health, Education, and Welfare has a proud and distinguished record of protecting the public health against unsafe, adulterated, or misbranded food. The Department of Agriculture shares with the general public a deep respect for the scientific competency and the sound judgment of the staff of the Food and Drug Administration to administer complex legislation in accordance with the dictates of the public interest as expressed by the Congress. The Food and Drug Admin-

istration can do this if the legislation allows them the essential latitude for the exercise of scientific and professional judgment.

Mr. Chairman, this completes that portion of my statement in regard to the color additives legislation before the committee. The remainder of my statement includes background and explanatory information which may be of value to the committee. I shall be glad to go through this statement or file it with the committee as the chairman may prefer.

You will notice that the statement has several pages descriptive of the development of agriculture in this country; some background information about the development of legislation safeguarding the food supply, some brief detail on the measures that are taken to test pesticides for safety, the preclearances of foods by both departments; some brief explanation of the activities under the meat and poultry inspection services and the pesticides regulation act, and some comments on interagency cooperation.

The CHAIRMAN. I think, Doctor, that it might be helpful to have a discussion of this, because of the future program of the committee and the importance of the proposals here, and particularly in view of the joint responsibility of your Department and of the Department of Health, Education, and Welfare. And especially since it has been reported recently about the differences that might exist in some of these matters between the two agencies.

Mr. CLARKSON. Would you like me to go through this statement then?

The CHAIRMAN. Yes, I think I would like to hear your description of it and, therefore, be in position to ask some questions about it. It shouldn't take long. It is about 15 pages.

Mr. CLARKSON. I would be very glad to, Mr. Chairman.

Mr. AVERY. Mr. Chairman, I have just been going through this as the doctor was making his statement, and I notice the first four pages there are largely statistical and do not have any particular bearing on the subject matter before the committee.

I wonder if he could skip that and begin reading at page 5. I was going to make the request anyhow. Do you agree, Doctor, that the gist of your statement, so far as the bill before the committee, would commence on page 5?

Mr. CLARKSON. The first four pages have to do with the development of agriculture and something of what we see of the job ahead in supplying the people with food.

Mr. AVERY. But not particularly with respect to this legislation is concerned.

Mr. CLARKSON. It does not bear particularly on it, no, sir.

Mr. AVERY. Yes.

The CHAIRMAN. Well, you may proceed then, Doctor, accordingly.

Mr. CLARKSON. Shall I begin on page 5 then?

The CHAIRMAN. Yes, with the understanding that your entire statement will be included. I do not want you to skip anything that is important to the subject matter, though.

Mr. CLARKSON. Mr. Chairman, may I suggest, then, beginning at the bottom of page 4, showing something about the look ahead?

Mr. KEITH. Mr. Chairman, just for the record, what you are doing in pages 1 through 4 is building the case, it seems to me, for the use

of certain chemicals and other substances in order to insure an adequate food supply for the Nation's needs; is that correct?

Mr. CLARKSON. This is to show the job of supplying the food needs of this growing Nation.

Mr. KEITH. Thank you.

The CHAIRMAN. You may proceed.

THE THREE PERIODS OF AGRICULTURE

Mr. CLARKSON. Farming in this country may be divided broadly into three periods. The first—from colonial times through World War I—was a period of physical growth by the development of new lands. In general, total farm output during this first 300 years increased only as additional cropland was put under the plow. Acre for acre, crop yields remained about the same.

Fortunately, there were farsighted individuals during this early period who knew that good farmland would one day all be farmed, and that if we were to build a great nation something had to be done about farming. The efforts of these individuals brought about the establishment, 100 years ago, of the land-grant colleges and the U.S. Department of Agriculture.

Research was encouraged, and new farm practices began to emerge. But even 50 years later crop yields on the average remained the same. Many changes in land use occurred that should have improved yields. Vast areas of highly fertile virgin land were plowed up, and wornout areas were discarded. Millions of acres of potentially productive wet land were drained. Fertilizer and lime use increased to substantial quantities. New higher yielding crop varieties were introduced and controls were developed for a number of insect pests and crop diseases. Yet with all these improvements, yield levels stayed about the same.

There was only one possible conclusion. All the improvements in farming that had been made had barely succeeded in offsetting the decline in soil productivity that was taking place.

The second period in our farming history—covering roughly the years between the two World Wars—is notable for two developments. The first of these was the application of mechanical power in farming, which gradually released millions of acres from the production of feed for horses and mules. These acres became available for food production. The second important development was the action taken through research, on a broad front, by the Federal Government, by the States, by industry, and by farmers to improve our agriculture.

The third period in our farming history is the one we are in now. Today, we can see the fruits of the efforts started in the earlier periods.

For example, in 1939, when World War II broke out in Europe, American farmers produced a 2½-billion-bushel crop of corn on 88 million acres. In 1959, they produced a record 69 percent more on 3 million less acres. The story repeats itself with virtually all major crops. The 740 million bushels of wheat produced in 1939 took 52.5 million acres. In 1959, on about the same acreage, the crop was 1,128 million bushels—half again as much as in 1939. Production of oilseed crops has more than tripled since 1939.

It is the same with livestock. In 1959, we had nearly 4 million fewer dairy cows than in 1949, but each cow produced nine-tenths of a

ton more milk during the year. For every two eggs a hen laid in 1939, her descendant is laying about three eggs. Total egg and poultry production is up 113 percent.

We have 100 million cattle and horses on the same pastures and rangelands that in 1939 supported only 81 million head. We had a pig crop of 102 million in 1958 on the same farm plant that produced 87 million in 1939.

All told, we produced 58 percent more farm commodities last year on fewer acres than we had in 1939.

Now let us look to the future.

We're all aware of the present rapid increase in our population and the predictions that this trend will continue. The Bureau of the Census estimates that in another 50 years—by the year 2010—we may have 370 million people, more than twice the present population of our Nation.

This means that just to maintain our present dietary levels, we shall require twice as much food and other farm products as we're consuming today. New knowledge of nutritional requirements, especially of those in older and younger age groups, is emphasizing the need for protective foods—those important for needed proteins, vitamins, and minerals. Milk and meats, fruits and vegetables are important providers of these nutrients; but they are the foods that are costly to produce, process, store, and deliver. To insure that our people 50 years from now will be as well fed as they should be, farmers then will have to produce at least twice their present crop output and more than twice their present production of livestock products.

At the same time, the amount of farmland available is not likely to be increased much beyond the acreage farmers are using today. As our population increases, considerable of our present farm land will go into urban and other nonfarm uses. We can expect that tomorrow's farmers—with only a little more land and considerably less manpower—will have to produce for a rapidly increasing population, whose needs and desires will influence, more and more, the kinds and qualities of products produced.

Measuring from a 1956 acreage base, to meet the needs of our people by 1975, will require the equivalent production from an additional 208 million acres at 1956 yields per acre. It is expected that we may increase our cropland by 25 million acres between 1956 and 1975. Putting what is now known in research into practice, that is, converting basic information into applied results, will increase production in 1975 enough to be equivalent to 160 million acres at 1956 yields. The remaining 23 million acres required can be achieved by new findings in research. The improvements which farmers must adopt between 1956 and 1975 must be 1.3 times as great as those made for the period of equal length between 1935–39 and 1956.

And as the previous part of the statement shows, Mr. Chairman, that was a period of remarkable growth in the productivity of American agriculture.

Now let us look ahead at the year 2010.

We must improve agriculture enough between 1975 and 2010 to be equivalent to the production from an additional 417 million acres at 1956 yields per acre. This is 1.6 times the annual rate of progress made between 1935–39 and 1956. To get this done, farmers will have to do

a better job of conserving soils and using available water supplies. They will need higher yielding strains of crops and livestock with specific qualities to meet special market demands: lean, tender beef, for example; milk with more solids and less fat; eggs that retain their initial high quality; fruits and vegetables more suitable for freezing and canning; field crops with qualities especially useful to industry. Farmers will need more effective methods of controlling diseases, insects, and weeds; better fertilizer practices, machines, and other production tools.

CHEMICALS IN AGRICULTURAL PRACTICES

In the early years of American agriculture we got along fairly well with very few chemicals because operations were on a small scale and many of our major pests of today had not yet gained entrance into this country.

Today, a wide variety of chemicals is available for safe use in all phases of food production, processing, and marketing. They include chemical fertilizers, insecticides, and weed killers; antibiotics, antiseptics, and preservatives; feed additives, fumigants, fungicides—and many others. It is hard for any one not closely associated with farming today to realize how utterly dependent we are on chemicals.

These chemicals are as essential for efficient production of foods on the farm as are tractors, improved varieties of crops, and better breeds of livestock. They play as great a part in assuring consumers a continuing supply of nutritious and appetizing foods as do our modern methods of food processing and marketing.

Every discussion of pesticides inevitably raises the question of biological control. We are often asked why we do not employ more natural enemies to control insects instead of using chemicals. We are working on this, too, and have been for 75 years. In that time we have introduced about 400 species of friendly insects from all over the world. Of these about 100 species have become established, and some are doing an effective job. We feel that biological control holds much promise, but it would be a great mistake to assume that this is the answer to the residue problem.

We are aggressively pursuing studies designed to tell us more about the metabolism of new pesticides, to discover what happens to pesticide chemicals inside the animal body, and to show us how to identify chemical structure that is related to pesticidal activity.

SAFEGUARDING THE NATION'S FOOD SUPPLIES

The Department considers the adequacy and safety of the Nation's food as our first responsibility. This has been our principal guide in carrying out assignments from the Congress and in serving the people of this country over the past century.

Our research and regulatory programs on crops and the complementary ones of the State agencies have provided adequate supplies of much needed fruits, vegetables, and grain products of high physical quality and relatively free from imperfections caused by diseases and insects, rot and mold. These are important contributions to the health of the Nation.

Similarly, the research and regulatory programs on livestock and poultry have provided wholesome meat to our consumers. These pro-

grams guard our people against many serious diseases which are transmissible from livestock and poultry to man. We are working in our laboratories to find controls and cures for these diseases.

The American housewife can buy meat and poultry with confidence. The Department's inspection stamps are her guides to safe and wholesome meat and poultry products.

Continuing research is vital for continuing food safety, but there are equally vital and more immediate and direct methods we can and do use in the Department of Agriculture to safeguard the food supply. These methods are employed in our various regulatory programs established to protect agriculture and the public from pests and diseases, both foreign and domestic, and to insure the safety and wholesomeness of meat and poultry.

For more than 50 years—since passage of the original Food and Drugs Act and the Meat Inspection Act—the Federal Government has had responsibility for insuring that foods in interstate and foreign commerce are safe, pure, wholesome, and produced under sanitary conditions, and that all such products are honestly and informatively labeled and properly packaged.

Effective enforcement of these laws has resulted in the soundly based confidence that consumers have in the foods they buy.

The Department of Agriculture, the State Agricultural Experiment Stations, and industry research cooperate to develop methods for the safe use of chemicals by farmers and the food industry. Educational programs of the Department and the State Extension Services, geared to this research, provide field guidance to farmers and others in the safe use of carefully tested and approved chemicals.

TESTING PESTICIDES FOR SAFETY

The laws governing registration of pesticides are stringent. All applicants for registration must furnish research data to show the effectiveness and safety of the proposed uses of pesticides.

Toxicological tests involve acute toxicity studies on laboratory animals. The results determine how the compound must be used in further experiments.

If the compound still looks promising, field tests are conducted to determine whether residues are left on food crops. At the same time, further animal studies are started to determine the biological effects on laboratory animals. Tests on larger animals may also be conducted. Skin absorption or irritation tests are made and test animals are observed constantly to determine any biological changes that occur. These evaluations may run over a period of several years.

Only a few of the hundreds of potential new farm chemicals studied every year are eventually approved for use. Among those that must be rejected as not meeting the exacting demands of safety in use are many that may do a superior job of killing insects or disease organisms.

The industrial development costs involved in making certain that a chemical is safe before it is put on the market are high. It is estimated that industry will spend $700,000 to $1.5 million in a 3- to 5-year period before the product reaches the market.

The Department of Agriculture carries responsibilities for both research and control activities affecting agriculture. In the develop-

ment and testing of pesticide chemicals, the closest possible relationship is maintained between scientists engaged in research phases of the work and those responsible for pesticide regulatory decisions. The same is true in the field of animal disease research and meat and poultry inspection or other livestock regulatory programs.

Many phases of the Department's research and regulatory work directly or indirectly affect human health. This is especially true in such research areas as human nutrition, entomology, animal pathology, and food processing and marketing, and in the regulatory areas of meat and poultry inspection, crop, and livestock pest control, and pesticide regulation.

PRECLEARANCE OF FOODS AND THEIR COMPONENTS

In the passage of the original Meat Inspection and Food and Drug Acts, the Congress provided for the surveillance of all foods in interstate and foreign commerce.

In the case of meat, a comprehensive inspection system was established with provisions for preclearance in the form of inspection of all carcasses, meats, and meat food products, including approval or rejection of chemicals and other additives. This is done under regulations issued by the Secretary of Agriculture as circumstances and the advance of knowledge require, to assure that the products marked "Inspected and Passed" are sound, healthful, wholesome, fit for human food, and truthfully labeled.

In regard to other foods, covered under the original Food and Drugs Act, authority was not given for preclearance, but broad authority was established for action against foods found in interstate or foreign commerce to be in any way adulterated or misbranded.

In recent years, the trend in the Congress has been toward more preclearance in order to serve two purposes:

(1) To give greater assurance of safety to the consumer; and (2) to give producers, processors, and distributors more precise guidelines for their operations in order to assure the safety of foods to consumers.

Five congressional enactments are in point:

(*a*) The "new drugs" provisions of the Food, Drug, and Cosmetic Act of 1938 provided for the preclearance of drugs not generally recognized among experts qualified by scientific training and experience as safe for use under the conditions recommended.

I notice, Mr. Chairman, that I omitted the certification provisions for coal tar dyes that should also have been included at that point.

(*b*) The Federal Insecticide, Fungicide, and Rodenticide Act of 1947 provided for USDA preexamination of economic poison labeling to insure safety and effectiveness in use.

(*c*) The Miller amendment to the Food, Drug, and Cosmetic Act in 1954 provided more workable procedures for HEW preclearance of pesticide chemicals in or on raw agricultural commodities by authorizing the establishment of tolerances when needed—legal levels—of such chemicals in these products. The directions for use on labels registered by USDA for pesticides are gaged to meet such tolerances in or on the raw agricultural commodities.

(*d*) The Poultry Products Inspection Act of 1957 provided for extension of the meat inspection type of preclearance to poultry products by USDA.

(*e*) The Food Additives Amendment of 1958 to the Food, Drug, and Cosmetic Act provided for preclearance of chemicals and other additives to foods not already covered under the meat and poultry inspection acts.

In each case the Congress provided the mechanism which permits the determination of safety of use and wholesomeness of the product to be made by persons qualified to exercise scientific and professional judgment. The legislative histories show the necessity for the exercise of such judgment to cope with the complexity of the problems and the rapidly advancing state of knowledge concerning them.

MEAT AND POULTRY INSPECTION SERVICES

Under the Meat Inspection Act and the Poultry Products Inspection Act, broad authority is given the Department of Agriculture for inspection of fresh meat and poultry, and processed meat and poultry products to assure that they are wholesome, free from disease and adulteration, and accurately labeled. This inspection applies to all operations in plants that prepare meat or poultry products for interstate or foreign commerce, with limited specified exemptions. It requires, first of all, Federal approval of the construction, equipment, processing procedures, and sanitation of each plant. The inspection begins with live animals or birds in holding pens or receiving rooms. It extends through all phases of plant operations to the final product. This is a continuous inspection beginning with every animal or bird being examined before and during the slaughter process.

All formulas used for prepared meat and poultry products at official plants must have prior approval by this Department. Cereals, dried milk, spices, fats, water, curing materials, chemical additives, colors, and all other ingredients in such products must meet specific standards of safety and quality, and must be used only within approved limits. Rigid controls are maintained also to insure adequate cooking, cooling, and storage facilities required to produce safe, high-quality meat and poultry products.

Labels to be applied to containers or packages of processed meat or poultry products must also be approved before use at official plants. Standards for meat products are developed and enforced to assure the consumer that he is receiving the kind of product he is entitled to expect from the label.

The Department maintains special chemical and biological laboratories to furnish meat and poultry inspectors with the information they need in making decisions on the wholesomeness of these products.

Meat and poultry inspectors remove from the channels of trade as unfit for human use more than a million pounds of meat and poultry products every working day.

The Federal meat and poultry inspection services are under the direction of veterinary medical personnel. The key determinations of wholesomeness of the product are made on the basis of a knowledge and understanding of the significance of physiological and pathological changes relating to injuries from disease, chemicals, insects, and

so forth. These services are backed up by a strong core of specialists in the pertinent phases of veterinary medicine. Our actions are based on sound scientific judgment and experience.

Also, training is given in these areas by the colleges of veterinary medicine, as this profession has traditionally been charged with the responsibility for the wholesomeness of meats and other products of animal origin.

PESTICIDE REGULATION

Under the Federal Insecticide, Fungicide, and Rodenticide Act and Public Law 86–139, the Department of Agriculture is responsible for registering and safe labeling of insecticides, fungicides, rodenticides, herbicides, and other chemicals. Before a product is registered, a list of its active ingredients, directions for use to obtain the results claimed, and precautions necessary in handling must appear on the label. All label statements must be factual, clear, and based on determinations that use of the product according to instructions is safe to the operator and the public and when used on food crops will not result in harmful or unlawful residues.

These pesticide labeling regulatory functions are the responsibility of the Department of Agriculture. The Department is also assigned other specific functions in this field under Public Law 83–518 of 1954, often referred to as the Miller bill.

This amendment gives the Food and Drug Administration responsibility for establishing tolerances, or exemptions from tolerances, for pesticide chemicals that may safely remain in or on raw agricultural commodities which come under the jurisdiction of that agency. In addition, it assigns to the Department of Agriculture responsibility for certifying to the Food and Drug Administration as to whether the product is useful for the purposes specified, and the responsibility to express an opinion as to whether or not the tolerance proposed for a chemical reasonably reflects the residue likely to remain on the crop when the product is used as directed.

The Food and Drug Administration has issued so far more than 2,000 tolerances on various food crops for about 100 pesticidal chemicals.

In carrying out its obligations under the law in regard to pesticide regulation, the Department of Agriculture has registered more than 56,000 chemical formulations involving about 230 active ingredients. Most of these chemicals are used in connection with food production.

Many of the registrations are for chemicals that have residue tolerances. Others are for chemicals that have zero tolerances or for which no tolerances have been established. In either event, the Department requires the registered label to bear directions for use which, if followed, will insure production of a crop that is safe from illegal residues.

INTERAGENCY COOPERATION

The personnel of the Department of Agriculture and the Department of Health, Education, and Welfare have developed over the years a close working relationship on matters of joint interest and responsibility. There is a continuing informal exchange of technical information between specialists of the two departments.

Scientists in the Agricultural Research Service studying animal diseases and agricultural pests work closely with those in the Public Health Service studying human health.

The Food and Drug Administration and the Agricultural Research Service frequently cooperate in solving problems which arise in the registration of pesticides and the administration of the Miller amendment to the Food and Drug Act.

There is frequent communication and cooperation between agencies of Health, Education, and Welfare and Agriculture's Institute of Home Economics on problems of human nutrition.

A day-to-day exchange of information exists between regulatory officials of the Agricultural Research Service and the Agricultural Marketing Service on the one hand and enforcement officials of the Food and Drug Administration on the other.

The growing complexity of food production, processing, and marketing, the increasing reliance upon scientific and technical developments, and the heightened interest in food safety and quality all serve to emphasize the importance of the close liaison which exists between these two departments of Government.

The CHAIRMAN. Doctor, thank you very much. Does that conclude your formal presentation?

Mr. CLARKSON. Yes, sir.

The CHAIRMAN. Mr. Moulder, do you have any questions?

Mr. MOULDER. Yes, Mr. Chairman.

Dr. Clarkson, you made a very fine statement and you covered the subject very thoroughly. I am very curious on the point I want to bring up in connection with the use of chemicals which you say are essential to the efficient production of foods on the farm, and that the Department considers the adequacy and safety of the Nation's food as its responsibility, and you specifically refer to vegetables.

Is it not true that about 90 percent of all of our foods consumed by the public are sold through the big chain grocery stores throughout the Nation?

Mr. CLARKSON. I can neither confirm nor amend that figure, Congressman. It is a rather high proportion, and the proportion is growing.

Mr. MOULDER. The point I am coming to is this: You referred to the use of chemicals in the production of foods on farms. A very small percent of the many types of groceries you buy in the stores are produced on the farms anymore. Most of the farms are engaged in the production of wheat, corn, cotton, peanuts, and meats, and so forth.

The point I am particularly coming to is, and everyone talks about it, the tomatoes you buy in the grocery stores or chainstores or other stores. They look pretty, and sell for 75 cents a pound. They may look pretty but they are the most tasteless, mushy, worthless, product I have ever seen in a grocery store.

I wonder if the Department has any jurisdiction over that. And are these worthless tomatoes the result of chemicals being used in their production on the farms that the chain grocery stores themselves operate, produce, and sell to the consumer?

Mr. CLARKSON. No, sir. It is the result, first, of the selection of certain varieties, which is in the hands of the grower and the person

to whom he supplies his material. Secondly, in the producing of fruits and vegetables of a perishable nature for the intricate channels of commerce today, they are oftentimes picked at an early stage of their development and do not carry the same flavor as though they had been freshly picked off the vine just before they are eaten.

That is one of the major problems.

Mr. MOULDER. I have searched for them in the summertime and wintertime and they are always wrapped in the same fancy cellophane packaging, and you go to all the stores and they are all just alike in any season regardless of when they are picked. Synthetic and tasteless.

Mr. CLARKSON. That is one of the very difficult problems of marketing in this country to obtain and maintain an assured supply at the end of this long supply pipeline. It is difficult with today's varieties to obtain the preferred qualities in the end product that you could get from picking it freshly from the vine. We are making some progress along that line, but it is a very difficult problem.

Mr. MOULDER. I know there are many other vegetables and products sold to stores that have the same so-called quality, you referred to quality, the wholesomeness of it. There are many other products that I have looked for, and I have searched very carefully, and they certainly are not what they used to be.

Mr. CLARKSON. Sweet corn is a prime example.

Mr. MOULDER. As a result of the chemicals and different processes which you have referred to as being essential to the food supply of our country——

Mr. CLARKSON. It is more the distance and the time that intervenes between the farm and the consumer's table.

Mr. MOULDER. Well, do not most of the big stores produce their own vegetables on their own farms?

Mr. CLARKSON. No, sir. Much of it is bought under contract by prime suppliers, but the chainstores do not produce the large share of the fruit and vegetable supply.

Mr. MOULDER. Well, do they use these chemicals? I have heard they inject certain chemicals in the plants that produce the fruits and vegetables. For example, on tomatoes, two or three crops from the one vine has resulted from the use of injections.

Mr. BYERLY. There is no commercial production in this way; there may be experiments of injections.

Mr. MOULDER. Plants of systemics, but no commercial production of this sort?

Mr. CLARKSON. We know of no commercial production.

Mr. MOULDER. One other question. Here we are in this country with so-called surpluses, and I am wondering if these so-called scientific processes are not creating a greater abundance and greater surplus.

Mr. CLARKSON. The surpluses are from 5 to 8 percent of the total production. They are concentrated primarily in a few crops. With the expanding demand, research has to be bringing out information that will be usable 5, 10, 20 years from now. Also, a great deal of the research is aimed at preventing erosion of the soil, irreparable loss of natural resources, and keeping ahead of the devastations of insects and disease.

For example, the varieties of oats that are grown commercially today were nonexistent 20 years ago. Each 2 or 3 years finds a new variety that produced well and had been fairly resistant to diseases and insects succumbing to a different species of insect or a new strain of disease, and then we have to go to work all over again and produce a new resistant variety. It is a never-ending job.

Mr. BYERLY. Mr. Chairman, may I respond further to Mr. Moulder's question?

The CHAIRMAN. Yes.

Mr. BYERLY. With respect to sweet corn, tomatoes, and other vegetables and apples, they are in our marketplace without insects, without worms in corn and in our apples, because of the use of pesticides.

Mr. MOULDER. That is all, Mr. Chairman.

The CHAIRMAN. Mr. Schenck.

Mr. SCHENCK. Mr. Chairman, my personal observation perhaps is not relevant, but it would seem that as our colleague, Mr. Moulder, pointed out, these estimates of increased production deemed necessary are properly the concern of the Committee on Agriculture, I suppose, because they are trying to work out crop controls and acreage controls, and so forth, and we have an awful lot of surpluses which, I am told, are costing us $1.5 million a day to store. Some of the suggestions to us here are that we are going to be short and we must have so many more million acres in production. These matters are probably not part of this committee's proper jurisdiction, as I understand our jurisdiction.

I am, however, very much interested in some of the statements that are made here on research programs that are being done by the Department of Agriculture apparently for the scientific research programs and the control programs. This concerns me quite a bit, because we are, all of us, receiving a lot of complaints about the duplication of services in the Armed Forces, for example, and here apparently we are doing the same thing in the Agriculture Department we are doing in the Food and Drug and Public Health Service.

So I am wondering if we could do things more economically by putting it where I think it belongs, in the Food and Drug Administration?

Mr. CLARKSON. There is no duplication in this work. As we pointed out, we work together on these activities, and the research and regulatory activities of the Department of Agriculture are those which are based on agricultural problems. The disease work, for example, has to do with the diseases of animals, the prevention and control and eradication and treatment of those diseases.

The health work of the Department of Health, Education, and Welfare in the Public Health Service is, of course, directed toward diseases of man. We maintain close liaison so that the advantages of findings in each area may be made available immediately to the other for its work and that the ideas and scientific thought may also be made mutually available and so on down through the other phases of our activities.

Mr. SCHENCK. Well, Doctor, I got the idea from your statement, or the impression from your statement, that your Agriculture Department is conducting rather extensive study on the effects of various kinds of insecticides, pesticides, fungicides, and so forth, on test ani-

mals, and the use of chemicals for growing, or controlling the growth of farm products, and also animals.

I remember a recent situation in regard to stilbestrol and some of the cranberry situations, and it does seem to me like you are duplicating and compounding unnecessary research expense.

Mr. CLARKSON. If we may take the chemical that was used with respect to the cranberry incident as an example, in my statement, I indicated that our research in these lines is coordinated with that in the States and in industry, as well as in other agencies of the Federal Government. The chemical Aminotriazole, was developed by industry. When it was presented for registration, our regulatory scientists required the industry to do the toxicological and chemical work to develop the basis for USDA acceptance. In addition our scientists checked as to whether any work had been done anywhere else on this chemical as to its effectiveness for the purpose for which it was intended, the safety to those who might come in contact with it at any time during its use, and the directions for its use. Then that information was transmitted to the Food and Drug Administration, and that agency, under the law, had a petition from the manufacturer for a tolerance of the material in the raw agricultural product, in this case the cranberries.

The Food and Drug Administration responded, that no tolerance could be given. Therefore, our registration was restricted to those usages which would leave no residue in the cranberries. It was then the product was made available for appropriate use, and there was no difficulty nor conflict between our two agencies, and no duplication of effort.

Mr. SCHENCK. Do I understand, Doctor, that you agree with the present so-called Delaney amendment that these additives or chemicals used must be given clearance prior to being used by the manufacturer and that he, the manufacturer, must develop evidence that they are not harmful to human health?

Mr. CLARKSON. I do. I agree that such information should be developed by the manufacturer and clearance should be made ahead of time.

Mr. SCHENCK. And that the burden of determining whether or not these things are harmful to health should not rest upon the Federal Government, is that your position?

Mr. CLARKSON. That is correct. That is the import of these bills. We support that provision in these bills. The cost of doing this is considerable and, as has been brought out in my statement and by the Department of Health, Education, and Welfare, we do not believe the Government should have to bear those costs.

The CHAIRMAN. Do not believe what?

Mr. CLARKSON. We do not believe the Government should have to bear the costs of developing all of the pertinent information.

The CHAIRMAN. Will the gentleman yield at that point?

Mr. SCHENCK. Yes. But I noticed the gentleman sitting to the left of the doctor was shaking his head and is apparently in disagreement.

Mr. BYERLY. Mr. Chairman, it is not disagreement. I simply thought that the record should show the cost to industry of developing effective chemicals. The estimate is it costs about $1 million for each chemical or approximately that amount to bring it through to

present the evidence and obtain clearance. This increasing cost has to be paid by industry against the possible market for chemicals. So that the question is posed with respect to those chemicals which have limited application on crops grown in small amount as to whether they will continue to develop chemicals for these necessary uses on small crops or whether that will become a public burden. It is not disagreement, but it seemed to me that this point should be elaborated.

Mr. CLARKSON. Thank you very much, Dr. Byerly.

Mr. SCHENCK. I agree with that.

The CHAIRMAN. Now, are you talking about developing these chemicals, Doctor, at this point?

Mr. BYERLY. Yes, sir.

The CHAIRMAN. Well, now, after they are developed by industry, as an example, do you think the industry should be required to assume the burden of proof that they are harmless?

Mr. BYERLY. This question is a very difficult one to answer, Mr. Chairman. It seems to me that in any case where any residue is found, it is necessary to show that, first, the residue is present. As I understand the law at present, that is all that is required with respect to certain kinds of residues. But the burden of establishing the presence of a residue is certainly a public responsibility.

With respect to the safety of its use——

The CHAIRMAN. Before you go into that, in other words, you think that it should not be the responsibility of the industry to show that the residue is present?

Mr. BYERLY. Not alone, sir, not alone.

The CHAIRMAN. You mentioned public responsibility. You are talking about the responsibility of the agency involved?

Mr. BYERLY. Yes, sir.

The CHAIRMAN. And you think then the industry is to develop the product and agencies within their responsibilities are to determine whether a residue is present?

Mr. BYERLY. They must have available methods which will demonstrate whether or not a residue is present for enforcement purposes and it may be necessary that the agency develop the method.

The CHAIRMAN. And if then the agency finds that a residue is present, then it becomes the responsibility of the industry to prove that it is harmless; do I understand you correctly?

Mr. BYERLY. I would prefer to use the word "safe."

The CHAIRMAN. Well, I would not quarrel with that. [Laughter.]

Mr. FRIEDEL. Mr. Clarkson, I received a letter from a resident of Baltimore that manufactures margarine, about the coloring of margarine. He says:

> The Committee on Interstate Commerce has been holding hearings on legislation proposals to amend the Food, Drug, and Cosmetics Act with respect to food additives, and this is to ask you to work for inclusion within the committee report of a statement that will specifically and clearly show that there is no intent, apart from the laws regulating coloring materials, to deprive margarine of its right to be colored yellow. I am sure there is no such intent but believe that the record should be clear.

What is your finding on the coloring of margarine so far as yellow is concerned? Is it safe?

Mr. CLARKSON. Well, there are colors being used today, to the best of our knowledge, that are safe. I know of nothing in this legislation that would deprive the margarine industry of any safe color.

If there is any specific information on the colors used in margarine that may have a bearing on this question, perhaps the people in the Food and Drug Administration can respond to it. I don't know of any question other than the one they have already outlined in their certification procedures. They find it difficult under the current law to deal with colors on which there is no conclusive evidence of harmlessness.

Mr. FRIEDEL. In other words, the colors that are used today are safe?

Mr. CLARKSON. I would say that the colors that are cleared by the Food and Drug Administration are safe, to the best of my knowledge. I am getting into their field when I am talking about general safety of colors. I can speak about the safety of the colors that we are using in our own programs and I can say, with assurance, that they are safe, but I would prefer the Food and Drug people to talk about the others.

Mr. FRIEDEL. There is nothing in this bill, though, that will deprive them of coloring their margarine yellow, that is, if it is now considered safe by the Government?

Mr. CLARKSON. That is considered safe under the terms of this bill; yes, sir.

Mr. FRIEDEL. One more thing. There is something that worries me considerably and that is one remark made that we are spending over $1.5 million a day for surpluses. Are we not getting more production out of the acreages by these new fertilizers? In other words, are we not getting more production out of 2 acres than we used to get out of 3 acres because of new fertilizers that they use on the farms today?

Mr. CLARKSON. Because of all technological developments such as, better care of the soil, better varieties, better disease prevention, better insect control, better fertilization, and improved knowledge of the use of water—all of those things have a very marked effect on productivity.

Mr. FRIEDEL. To come to my point now, some farm will have about, say 1,500 acres, and they will pay them for not producing 500 acres under the soil bank, but they will get as much out of their 1,000 acres that they used to get out of their 1,500 acres and yet we are giving them a bonus for not planting. Is that not a wrong approach?

Mr. CLARKSON. If we had not increased our productivity per acre and per animal, as we have during this past 30 years, we would have a shortage of food in this country.

The problems of overproduction are with a few of the large staple crops. The production of livestock and livestock products, poultry, fruits, vegetables, particularly leafy vegetables which are so essential to the kind of diet that we enjoy today, as contrasted with 30 years ago—all of those things are the fruits of this technological advance. We would be in a very much less advantageous position, dietwise, in this country if that had not been so.

Mr. FRIEDEL. But the surplus is growing on wheat, corn, and things of that sort, that they are being paid not to produce under the soil bank; but they are getting more production with less acreage than they

got before. There ought to be another approach to it to cut down this $1.5 million a day for storage. That is the figure I have received.

Mr. CLARKSON. My understanding, Mr. Congressman, is that that very subject is being discussed over in the Agriculture Committee with representatives of the Department, and I think their views will be much more important than mine as to how to solve that problem.

Mr. FRIEDEL. All right, Doctor; but this worries me. That is all.

Mr. CLARKSON. It worries all of us, sir.

The CHAIRMAN. Mr. Younger.

Mr. YOUNGER. Dr. Clarkson, I would like to have you enlarge a little bit on one of your statements. On page 8:

> The Food and Drug Administration can do this if the legislation allows them the essential latitude for the exercise of scientific and professional judgment.

Will you please enlarge on that?

Mr. CLARKSON. The request for the amendment to the Food, Drug, and Cosmetic Act which is before the committee, grew out of the difficulties of administration which the Department of Health, Education, and Welfare was experiencing. Because the language of the current act with regard to the color additives is too rigid and does not give them the opportunity to make an appropriate finding on the safety of certain colors unless they are able to make a positive finding that they are harmless. As I recall it, the Supreme Court decision confirmed the interpretation that "harmless" means harmless under any circumstances.

So the new legislation is necessary in order to allow the agency to exercise scientific and professional judgment in determining the safety of color additives.

Mr. YOUNGER. In your opinion, does the Delaney amendment give to the Department any latitude to exercise scientific and professional judgment?

Mr. CLARKSON. Of course, scientific and professional judgment must be exercised in regard to carcinogens, in regard to the current law. It is first, an exercise of that judgment to determine what is a carcinogen. We speak of carcinogens, strong carcinogens, weak carcinogens, possible carcinogens, potential carcinogens, and all that sort of thing; and a determination has to be made. Secondly, there has to be a determination as to whether or not there is a carryover in the food or feed.

As I mentioned in the statement, this matter has been cited for further study by your own committee, with the expressed intention of getting together the experts in that area. And it is under study in the executive branch of the Government. And a number of suggestions for some change in language have been made, and our feeling is that this should be most carefully reviewed. To the extent that it can be done consistent with the protection of the public health, there should be as full an opportunity as is possible for the exercise of sound scientific judgement in relation to carcinogens.

This is a most serious part of this whole additive problem, and I am hopeful that these studies that were mentioned may shed some light as to a more precise way to proceed.

Mr. YOUNGER. I am glad to get that explanation, because from my standpoint, an attempt to legislate in this field during a period of hysteria is very difficult. That is the situation that we are in today, a

complete condition of hysteria exists among the people due to the widespread publicity on this cranberry incident, as well as other incidents. On one side you got a demand the Pure Food and Drug should have no scientific judgment, and I am glad to get your explanation of that.

One other question: On page 7 of your second discourse, which was the supplement, you talk about poultry. Now, we had testimony here from the Department of Food and Drug about the number of chickens that were taken off the market. How did that happen?

Mr. CLARKSON. The Poultry Products Inspection Act is a new act, Mr. Congressman. It went into effect in 1957, and there are provisions in the law for it to become effective on a gradual basis. It is just now coming into broad effectiveness. I do not know of the instances about which you spoke, but certainly there have been many instances over the years wherein the Food and Drug Administration have had to seize poultry because it was unsound or diseased or otherwise unfit for food.

Mr. YOUNGER. This is in the case of the stilbestrol residue.

Mr. CLARKSON. I beg pardon; I did not hear that.

Mr. YOUNGER. It was the residue of the stilbestrol in the skin of the chicken, that caused the action.

Mr. CLARKSON. Well——

Mr. YOUNGER. Several thousand pounds, I believe.

Mr. CLARKSON. Yes, sir. In fact, several million pounds.

Mr. YOUNGER. I can hardly hear you.

Mr. CLARKSON. Several million pounds.

Mr. YOUNGER. Several million?

Mr. CLARKSON. The use of diethystilbestrol in poultry was approved some years ago, about 12 years ago, under the new drugs provision of the Food, Drug, and Cosmetic Act and with appropriate limitations in regard to the safety of such use.

When the Department of Agriculture was given responsibility for the poultry products inspection work, which followed a voluntary inspection activity, the Department was of the opinion on the basis of all knowledge available to it that the products from such use were safe. The poultry on which this practice had been approved was passed for food up until the time of the announcement by the Department of Health, Education, and Welfare in December.

At that time, in the light of the disruption to the trade because of the HEW action, the considerable amount of this poultry that was on hand (although it was a small fraction of the total poultry supply), and was in the nature of distressed material, and the Department of Agriculture then agreed to purchase that product and to divert it from the market.

Mr. YOUNGER. In the case of the use of the pellets in the animals' ear, implants of that kind, after you once start the treatment, do you have to continue it, or if you take it off of that diet, what is the reaction?

Mr. CLARKSON. If diethystilbestrol is added to the feed of animals and it is added in limited amounts, 10 milligrams per day, if I recall correctly, that material will remain in the tissues of the animal for a period of time after it is taken off the feed. It remains there in diminishing amounts as time goes forward. This is not a chemical

which stores up for extended periods of time such as some of the heavy metals and other toxicants.

Mr. YOUNGER. I understand there is a bill introduced to brand cattle that had the pellets implanted because if they have had that treatment and you take them off of the treatment, they immediately go down in weight and other effects occur, so that cattlemen want any animal that has had the treatment of pellets so branded.

Mr. CLARKSON. The time that is required between the last feeding and slaughter of the animal for meat is 48 hours, which is not period of time long enough to interfere with the weight and condition of the animal. Even if it were a longer period of time, the animal does not go down in weight or condition. But if it were still in its period of rapid growth, its rate of grow and development would be retarded.

Mr. YOUNGER. You do not feel that that kind of treatment would make an alcoholic out of the animal?

Mr. CLARKSON. No, sir.

Mr. YOUNGER. You feel it is safe?

Mr. CLARKSON. I feel it is safe under the permitted usage.

Mr. YOUNGER. That is all.

The CHAIRMAN. Mr. Rhodes.

Mr. RHODES. No questions.

The CHAIRMAN. Mr. Avery.

Mr. AVERY. Just briefly, Mr. Chairman. I do not want to belabor this jurisdictional conversation between this committee and the Agriculture Committee as far as the supply of food is concerned, but I would like to say, Doctor, the reason I did not hear the beginning of your statement was because I had a constituent testifying before the Agriculture Committee, and from the testimony I heard over here, your statement is more cheerful than any of the overtones in the Agriculture Committee.

The fact that twice the food supply will be needed 50 years from now that we have today is remarkable indeed.

Now, on the subject before this committee, on page 14, as I read your statement and understood your explanation, it was that the Miller amendment conveyed upon the HEW the authority to establish certain tolerances whereby under that tolerance, why, a residue could be permitted and considered safe; right?

Mr. CLARKSON. Yes, sir.

Mr. AVERY. All right. Then what about the Delaney amendment, what supersedes the other? It is my understanding that with the Delaney amendment we just drew the line and said:

> No, any residue that could be cancer provoking or any additive that could be cancer provoking and leaves a residue could not be used period, and no tolerance is established.

I do not understand quite the relation between the Delaney amendment and the so-called Miller amendment.

Mr. CLARKSON. The Delaney proviso is contained in the food additives amendment to the Food, Drug, and Cosmetic Act, as you know. The tolerances established under the food additives amendment are those concerning materials which are added to foods other than pesticide chemicals in or on raw agricultural products which are covered under the Miller bill or the pesticide amendment.

The wording of the Delaney proviso, if I am correctly informed, does not apply to the tolerances set under the pesticides provision. However, the Department of Health, Education, and Welfare has stated, I believe, that with regard to carcinogens, which the Delaney proviso refers to, they are using the same degree of care in establishing tolerances of pesticide chemicals as though the Delaney proviso did apply to those chemicals.

Mr. AVERY. Well, in effect, it would abrogate the Miller amendment, would it not?

Mr. CLARKSON. No, sir; there are many residues of pesticide chemicals for which the Department of Health, Education, and Welfare has not found it possible to establish a tolerance of any kind. Some of them are carcinogens, some of them are not. It depends upon their evaluation of the safety of such residues in regard to the total picture of the food safety for the Nation.

Mr. AVERY. I have just one further question. I was advised the other day that there have been some additives prohibited by HEW because they were able to identify some residue that could be cancer provoking, but they could only find that in mice that had been inbred for five or six generations. Except for the inbreeding specimens, it was not identifiable.

Now, in your opinion, would this Supreme Court decision that you referred to a while ago, would that be applicable to a situation like that; would that be considered a representative type situation, a common type situation?

Mr. CLARKSON. Mr. Congressman, that is just one example of the many difficult scientific and professional judgments that have to be made in this entire field. There we are speaking about a basic determination as to whether or not the chemical in question is a carcinogen, whether it is or is not a cancer-inducing material, and strains of mice vary markedly in their susceptibility to the development of cancer. All mice have some such susceptibility. We have not been able to find a strain that is without such susceptibility.

If one takes the strain of greatest susceptibility, then he has a very much different base from which to make his calculations than if he takes a strain which is at the opposite end of the scale, a very slight susceptibility. But the determination must be made on the basis of the differences that are observed in those that are subjected to the experimental diet or treatment, as against those which are the controls from the same strain of mice.

It would be cheating if one were to take one strain of mice for the controls and another strain of mice for the trial, because there would be no answer whatever in that kind of situation.

So I can only say that this adds to the difficulty of the decision.

Mr. AVERY. Thank you, Doctor; that is all, Mr. Chairman.

The CHAIRMAN. Mr. Jarman.

Mr. JARMAN. Dr. Clarkson, how soon do you think the Department of Agriculture will be in a position to make a recommendation to the Congress on the Delaney anticancer amendment set out in H.R. 7624?

Mr. CLARKSON. I can hardly express that in terms of time, Mr. Congressman. We had hoped to be able to do so with the completion of the study in the executive branch, which includes the bringing together of the thoughts from the various agencies under the super-

vision of the Bureau of the Budget, and also the studies of your own committee, which would be revealing in terms of the final recommendation.

Mr. JARMAN. But will your recommendation be made in time for our consideration here in the committee of the legislation that is before us?

Mr. CLARKSON. I should certainly hope so. I would anticipate that would be so. I am sure that is the aim of the executive branch of the Government, and I know it would be the aim of your committee to have your study completed by then.

Mr. JARMAN. In that same connection, you may not be in position to comment on this but I will ask you if you are, and if so, I would be interested in hearing from you—did you read the Drew Pearson column in yesterday's Washington Post?

Mr. CLARKSON. No, sir, I did not.

Mr. JARMAN. Well, I would not read it in detail, but for your information and for the record, I will read just some excerpts from it. The column is headed, "Split Within Cabinet on Additives." And it leads off by saying:

> It isn't being advertised but two members of Ike's cabinet are drifting apart over lipstick and food additives.

Later on in the column he points out that Secretary Flemming, in appearing before this committee, has already testified and strongly endorsed the Delaney anticancer amendment, and then in the final paragraph it says:

> The chemical and cosmetic lobby now wants to change the law and has been talking to Benson. Originally the Agriculture Secretary was to testify March 11—

today—

> in favor of weakening the law, but he has now notified congressional leaders he will send a spokesman instead. Apparently Benson didn't want to be put on the spot regarding his differences with Cabinet colleague Flemming.

Do you have any comment or are you in a position to make any comment? [Laughter.]

Mr. CLARKSON. I think the communications between the Department and the chairman of the committee, and the committee staff, are clear, that the Department was glad to respond to the chairman's invitation to send a representative to discuss these matters with the committee, and that within 2 or 3 days after that, which was about 2 weeks ago, I telephoned Mr. Williamson and told him that I expected to be the witness.

I don't think it is worthwhile for me to make any further comment on what the gentleman said.

Mr. JARMAN. I can understand that. I can understand your answer. Doctor, this has gone out on a nationally syndicated column for general reading all over the country, and it does indicate the possibility of a split existing between the two Departments and between the two Secretaries on a vital part of the question that faces us in deciding on these legislative proposals. I do think it would be of real importance to this committee and to the Congress that we have from the Department of Agriculture a clear-cut recommendation as to what you think should or should not be done on this Delaney

anticancer amendment before this committee and the Congress works on these bills.

Mr. CLARKSON. I agree with you, Mr. Congressman, and that is our intention.

Mr. JARMAN. Thank you.

The CHAIRMAN. Mr. Glenn.

Mr. GLENN. Doctor, on page 5 of your statement you say:

> The higher yielding strains of crops and livestock with specific qualities to meet specific market demands, lean, tender beef, for example—

now, does the use of stilbestrol in feed for beef cattle produce more lean, tender beef than feed that is used without stilbestrol?

Mr. CLARKSON. The use of stilbestrol in the fattening of animals that are in a position to put on weight at a rapid rate results in about a 10 percent increase in the rate of gain. I have no information that it would improve the tenderness in any way. There is a good deal of discussion and difference of opinion as to whether or not the use of stilbestrol improves the quality or contributes toward inferior quality in some respects.

But the point of the matter is that the producer is able to produce about 10 percent more volume and that, of course, is reflected in the entire price structure of meats on the market.

Mr. GLENN. You mentioned fat. Do you mean that this 10 percent is nothing more than an increase in the fat structure of the cattle?

Mr. CLARKSON. No, sir. There are differences of opinion as to whether or not the quality and conformation of the animal are better, the same, or less desirable when this is used, but it is not put on just in additional fat. It hastens the physiological processes in putting on weight more rapidly.

Mr. GLENN. I am sort of amazed at the statement which you make, and which I have heard before, that it is necessary to remove more than a million pounds of meat and poultry products daily. In view of this very fine statement you have given us as to all of the things which you do and in the inspection and production of meat, do you not think this is a large amount that has to be removed from the products, meat and poultry products, that we have to consume?

Mr. CLARKSON. Poultry and animals, like man, are subject to all the infirmities that we are so familiar with; diseases of all kinds and abnormalities of all kinds. They are not uniform in their susceptibility to these things even as among animals of the same family on the same farm on the same feed. They are susceptible to these conditions which, if allowed to go without restrictions into the food supply, would result in unwholesome food. So they are removed from food channels in the course of our meat and poultry inspection process.

Now, a million pounds a day in relation to the 30 billion pounds of total meat supply is really a very small fraction of the entire meat supply.

To the other point of your question, I might say this: that the work of the Department and of the State departments of agriculture during the past 40 years in the efforts to eradicate tuberculosis of cattle in this country have dropped the condemnations for meat because of tuberculosis very nearly to the vanishing point, whereas it used to be a very heavy source of condemnation, of cattle particularly, going to market.

Mr. GLENN. Thank you very much. That is all, Mr. Chairman.

The CHAIRMAN. Mr. O'Brien.

Mr. O'BRIEN. Mr. Chairman—Doctor, I know we are concerned primarily here with the safety of foods, but I would like to touch for a moment, if I may, on the point raised by Mr. Moulder. I understand the difficulties of this pipeline in trying to get a tasty tomato from the grower to the consumer. As far as I am concerned, tomatoes, unless they are grown in my own county, are usually just an ornament on the salad plate. But you do say in connection with meats that the American housewife can buy meat and poultry with confidence. That may be true with regard to safety, but as far as quality is concerned, is it not a fact that there are millions of pounds of meat sold in this country every week which can acquire taste on your plate only if they are doused with strong sauces?

Are we not, in effect, sacrificing a great deal of quality for quantity in our meat supply in this country?

Mr. CLARKSON. I think, Mr. Congressman, if you will compare the meat supply of today and the meat supply of 40 years ago, it is an improved meat supply that comes to our table today.

We all have difficulties with the quality of meats as we do with other foods, and I agree with you that we are often dissatisfied with the meat that is placed on the table. But we have so many conflicting desires, it is very difficult to get all of those things molded into one animal or into one bird. For example, we require tenderness to the point that it is very difficult to have juiciness and tastiness in the piece of meat that we are willing to accept because we have such a fetish for tenderness, and one of the real problems of the animal husbandman and the rancher and the farmer is to produce tender beef that retains this juiciness and tasty quality.

Mr. O'BRIEN. Doctor, what I complain about is the lack of taste more than anything else, and it has been my experience, and I assume of many members of this committee, that the meat you get, including steak, is not as tasty as it used to be. In fact, sometimes I have a feeling that I can get more taste out of a pretzel than I can out of a steak. Perhaps I am not a good buyer. I go into one of these large stores and the meat is very prettily packaged, but by the time it gets on the table, I have just wasted my time. There is no taste at all. It might be safe and it might be fine, but I don't want to get to a point right away where you just pop a handful of pills in your mouth and you have got your meal. I like a little taste, too.

Mr. CLARKSON. We are working awfully hard to prevent our having to come to that point. We would like to eat meat, too.

Mr. O'BRIEN. I think sometimes our wives are unfairly blamed because they do not cook as well as our mothers. I have an idea that our mothers had a little better meat to work with in the beginning.

That is all, Mr. Chairman.

The CHAIRMAN. Have you finished, Mr. O'Brien?

Mr. O'BRIEN. Yes, sir.

The CHAIRMAN. Mr. Keith.

Mr. KEITH. Did I understand you to say, Doctor, that the Secretary of HEW had approved the establishment of some tolerances of some known carcinogens?

Mr. CLARKSON. No, sir; I said that the practice of the use of stilbestrol or diethystilbestrol with poultry had been approved by HEW

under the new drugs provision of the Food, Drug, and Cosmetics Act some 12 years ago, and it was in use until last December.

Mr. KEITH. It is my understanding that the Delaney amendment says that no additives shall be deemed to be safe it is found to induce cancer when ingested by man or animal or if it is found, after "tests which are appropriate" for the evaluation of the safety of food additives, to induce cancer in man or animal; is that correct?

Mr. CLARKSON. That is my understanding.

Mr. KEITH. In the tests that were used with Aminotriazole, the amount ingested into the diet of the rats was very, very substantially higher than that which could be consumed by the individual if he ate oceans of Oceanspray cranberries. It does not seem to me that the law is going to be as respected as is necessary for it to be enforced if there is not an effort on the part of us here to get the Secretary of HEW to establish a tolerance wherever possible.

As it is now, if there are two parts per trillion of Aminotriazole in one cranberry, the Secretary has to declare that it is unsafe. I think we should attempt to have this law contain some area for the Secretary to exercise more judgment and make every effort to establish a threshold.

Do you agree with me in that respect?

Mr. CLARKSON. I think, Mr. Congressman, that that is one of the things that needs most careful study. In the studies that are going on in relation to the Delaney proviso, the question of appropriate methods of determining whether or not a substance is a carcinogen in the first place; secondly, to determine its probable effect when used as a component of food or of feed; and thirdly, the methods that are used for such testing, which are extremely complex and very difficult because when we get into small fractions such as parts per billion or even parts per million, the interference of base materials that are normally present in the food or feed cause great difficulty in reading the results of those very sensitive tests in those very small amounts.

Mr. KEITH. I noticed you used the word "safe" in the discussion here earlier. Perhaps the public's impression as to the possible difference of opinion between Secretary Benson and Secretary Flemming was that Secretary Benson appeared to feel that cranberries were safe. That there is where they differed; is that your understanding?

Mr. CLARKSON. I think, Mr. Congressman, that there was no difference of opinion with regard to cranberries that did not contain the chemical that they all were and are safe. It is only those where misuse occurred, and where there was a residue in the cranberries, that the question of safety arose.

Mr. KEITH. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Dingell.

Mr. DINGELL. Mr. Chairman, I note that the clock is approaching 12, and I imagine there will be a quorum call immediately thereafter. May I ask the Chair what is the intention of the committee with regard to further questioning of the witness? I have several questions I would like to ask and I have heard expressions from other colleagues and I know if I ask my questions, my colleagues would not be able to. I would like to, and I would like to accord them the same opportunity. What would the Chair rule on that?

The CHAIRMAN. Well, the Chair, of course, would have to comply with the rule of the House, assuming that the House is in session, that we will adjourn, which will be in a very few minutes. We cannot come back this afternoon because of the important business before the House.

Mr. DINGELL. Would it be possible to get this witness back another time, Mr. Chairman?

The CHAIRMAN. Yes. I could not say just when at the moment.

Mr. ROGERS of Florida. Mr. Chairman, I wonder if the Chair would consider setting another time for the witness, and perhaps suggesting that they would give us at that time, when the Chair sets the next time, the Department's decision on the Delaney amendment. I think it would be helpful to us. And certainly with as much study as must have gone into it, the Department could give us some indication of the feeling of the Agriculture Department at that time. If we are going to have to act on this legislation, certainly the least the Departmen can do is come up with some suggestion on that amendment by that time.

Mr. DINGELL. I would also like to point out this is not new information of the Department. It seems to me they are rather tardy in getting this Delaney amendment up to us. How long has this matter been boiling within the administration?

Mr. CLARKSON. Well, for some weeks.

Mr. ROGERS of Florida. I would have thought it would have been presented today.

Mr. DINGELL. It would appear, at least, your Department has not been precipitous in bringing its views on the Delaney amendment. How much longer are we going to have to wait for the views of your Department?

The CHAIRMAN. Now, the Chair will have the responsibility of trying to establish the time to come back. As I understood from you, Doctor, the President has designated a committee composed of scientists who are studying this matter and which committee is to make a report; is that true?

Mr. CLARKSON. Well, my statement was that under the leadership of the Bureau of the Budget, all the departments are asked to submit their information and views; and of course the President has asked his science adviser also to inquire into this matter; and it is my understanding that the administration's position will be determined after those studies have been completed.

The CHAIRMAN. Yes. I understood that was the purport of your statement.

Mr. CLARKSON. Yes, sir.

The CHAIRMAN. Naturally, you are not in position to speak for the Department at this time as to what the Department's views are going to be?

Mr. CLARKSON. That is correct.

The CHAIRMAN. Of course, it is rather interesting in view of the fact that Mr. Dingell raises the question and in view of the fact that the Secretary of Health, Education, and Welfare has already testified and made his position very clear and definite. My problem is setting another date, when we could expect this information to be available. Do you have any indication at all of how much time it is going to take for this matter to develop?

Mr. CLARKSON. I am sorry, Mr. Chairman, I am not in a position to speculate on it. I really do not know.

The CHAIRMAN. You do not know whether a decision is impending or not?

Mr. CLARKSON. No, sir, I do not know. It could be tomorrow, but I do not know that. I would be glad to transmit the question to the Secretary, but you may wish to pursue it some other way.

Mr. DINGELL. It would appear your Department has been rather leisurely in its approach to this matter, though, would it not?

Mr. CLARKSON. I think we have worked very hard at it, Mr. Dingell.

Mr. DINGELL. The Department of Health, Education, and Welfare had their views up here right away when requested, and you folks, I assume, got notice about the same time. You have been aware of this ever since the original Delaney amendment was enacted into law. You were aware of it when the matter was proposed to the Senate during the last session of Congress, and now here, a matter of at least 2 years later, you still do not know what to make of the Delaney amendment. I think you are rather derelict in your responsibilities down there.

The CHAIRMAN. The Chair will have to bring this to a close today. I have a good many questions myself that I wish to ask. Apparently other members have. Mr. Rogers.

Mr. ROGERS of Florida. A few, Mr. Chairman.

Mr. HEMPHILL. I have two.

The CHAIRMAN. The Chair will try in cooperation with your Department, Dr. Clarkson, to set another time when we can meet. We have to take into consideration developments within the next few days with reference to the discussion here, and the investigation or study that is under way that you spoke of under the direction of the Bureau of the Budget.

Now, I have heretofore announced that it is our intention to assemble a panel of scientists on this matter. We have been working on it now for some time, as a matter of fact, over a couple of weeks or so.

I have scheduled April 5 and 6 for this panel.

The National Academy of Sciences is recommending to us people to serve on the panel. We are not ready to announce the personnel of the panel yet, but that will be available within the next few days.

If, during the time the panel is here, either immediately before or immediately after, we could arrange to have your reappearance, Doctor, I will try to work it out.

Mr. CLARKSON. Thank you, Mr. Chairman. We will be at your disposal, and I will convey this information to the Secretary, so that we may be prepared when the chairman calls.

The CHAIRMAN. Thank you very much. And with that explanation, the committee will adjourn until that time, or until further announcement.

(The Department of Agriculture later submitted the following information for the record:)

DEPARTMENT OF AGRICULTURE,
Washington, D.C., May 16, 1960.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives.

DEAR CONGRESSMAN HARRIS: This is in further reference to the Department's statement of March 11, before your committee on H.R. 7624 and S. 2197, bills which would amend the Federal Food, Drug, and Cosmetic Act relating to color

additives. We indicated to the committee at that time that the Department would prefer to delay making any recommendation with reference to the so-called anticancer clause until there had been opportunity to consider the matter further.

We now understand from consultations with representatives of the Department of Health, Education, and Welfare that your committee may wish to consider also the feasibility of amendments to the Food Additives Amendment of 1958, which we understand are being sent to the committee by that Department. Accordingly, we are also commenting on these amendments in this letter.

In the passage of the original Meat Inspection and Food and Drug Acts, the Congress provided for the surveillance of all foods in interstate and foreign commerce.

In the case of meat, a comprehensive inspection system was established with provisions for preclearance in the form of inspection of all carcasses, meats, and meat food products, including approval or rejection of chemicals and other additives. This is done under regulations issued by the Secretary of Agriculture as circumstances and the advance of knowledge require, to assure that the products marked "Inspected and passed" are sound, healthful, wholesome, fit for human food, and truthfully labeled.

In regard to other foods, covered under the original Food and Drug Act, authority was not given for preclearance, but broad authority was established for action against foods found in interstate or foreign commerce to be in any way adulterated or misbranded.

In recent years, the trend in the Congress has been toward more preclearance in order to serve two purposes: (1) To give greater assurance of safety to the consumer; and (2) to give producers, processors, and distributors more precise guidelines for their operations in order to assure the safety of foods to consumers. Five congressional enactments are in point:

(*a*) The "new drugs" provisions of the Food, Drug, and Cosmetic Act of 1938 provided for the preclearance of drugs not generally recognized among experts qualified by scientific training and experience as safe for use under the conditions recommended.

(*b*) The Federal Insecticide, Fungicide, and Rodenticide Act of 1947 provided for USDA preexamination of economic poisons including labeling to insure safety and effectiveness in use.

(*c*) The "Miller amendment" to the Food, Drug, and Cosmetic Act in 1954 provided more workable procedures for HEW preclearance of pesticide chemicals in or on raw agricultural commodities by authorizing the establishment of tolerances when needed—legal levels—of such chemicals in these products. The directions for use on labels registered by USDA for pesticides are gaged to meet such tolerances in or on the raw agricultural commodities.

(*d*) The Poultry Products Inspection Act of 1957 provided for extension of the meat inspection type of preclearance to poultry products by USDA.

(*e*) The Food Additives Amendment of 1958 to the Food, Drug, and Cosmetic Act provided for preclearance of chemicals and other additives to foods.

In each case the Congress provided the mechanism which permits the exercise of scientific and professional judgment in arriving at determinations of safety of use and wholesomeness of the products. These are good provisions. This Department fully supports them. The legislative histories show the necessity for the exercise of such judgment to cope with the complexity of the problems and the rapidly advancing state of knowledge concerning them.

The anticancer clauses contained in the Food Additives Amendment of 1958 and in H.R. 7624 on page 10, lines 11 through 22, are flat prohibitions against the exercise of scientific and professional judgment in the determination of safety. That such a flat prohibition may present problems is well exemplified in the case of selenium, a known carcinogen. Normal amounts (0.1 p.p.m.) in the diet appear to have no measurable effect upon animal health. Sheep on diets with subnormal amounts (0.05 p.p.m. or less) are not thrifty and show abnormalities of the muscular and internal organs. Excessive amounts (5 p.p.m. and above) in the diet produce poisoning. Here we have a chemical, a carcinogen, a toxicant, which in proper amount is essential to animal health. The law should not prevent proper use of such a chemical as an additive or otherwise.

In view of the above and since we understand that the Secretary of Health, Education, and Welfare has adequate authority to withhold from use any additive that he is unable to find would be safe in regard to cancer as well as in re-

gard to toxicity and other factors, it is our opinion that the anticancer provisions in lines 11 through 22 on page 10 of H.R. 7624 are unnecessary. This is equally true of the anticancer provisions in the Food Additives Amendment of 1958. We fully agree that the Secretary of Health, Education, and Welfare should withhold from use any additive which in his judgment would be unsafe, but we urge that the decision on safety be left to him rather than being determined by law.

In the event the committee should desire to retain an anticancer clause in the color additive legislation, the following language is submitted for its consideration:

In H.R. 7624 on page 10 at the end of line 22, before the period, insert the following proviso: "*Provided*, That this subsection shall not apply with respect to the use of an additive, if the Secretary finds, upon the basis of evaluation by experts qualified by scientific training and experience, that, under the proposed conditions of use, reasonably certain to be followed in practice, there is no reasonable basis to conclude that such use of the additive will involve a hazard of causing cancer in or resulting in harm to man or animal."

Similar language should be provided for the anticancer clause in the food additives amendment.

We are attaching a copy of the report of the President's Science Advisory Committee released on May 14, 1960, which supports our position on this matter.

If the above proviso is not acceptable and the committee wishes to retain an anticancer clause in H.R. 7624, it is recommended that the following proviso, which is being suggested by the Secretary of Health, Education, and Welfare, be included before the period at the end of section 706(b)(5)(B) (p. 10, line 22, of H.R. 7624): "*Provided*, That clause (i) of this subparagraph (B) shall not apply with respect to the use of a color additive as an ingredient of feed for animals which are raised for food production, if the Secretary finds that, under the conditions of use and feeding specified in proposed labeling and reasonably certain to be followed in practice, such additive will not adversely affect the animals for which such feed is intended, and that no residue of the additive will be found (by methods of examination prescribed or approved by the Secretary by regulations, which regulations shall not be subject to subsection (d)) in any edible portion of such animals after slaughter or in any good yielded by or derived from the living animal."

This proviso contemplates that the Secretary of Health, Education, and Welfare will prescribe or approve methods of examination that would determine whether significant residues of additives remain in any edible portion of slaughtered animals that have consumed such feed or in any food yielded by or derived from the living animal.

Similar language should then be added to the anticancer clause contained in the food additives amendment.

In addition, the Department of Health, Education, and Welfare is proposing a modification of the prior sanction (grandfather) clause contained in section 201(s) of the Food, Drug, and Cosmetic Act as follows:

"The last numbered clause of section 201(s) of the Federal Food, Drug, and Cosmetic Act (which clause is redesignated as clause (4) by section 101(a) of this Act) is amended by inserting in such clause, before the period, a colon and the following: '*Provided*, That, with respect to any sanction or approval granted pursuant to this Act, this clause shall be inapplicable, and the provisions of this Act (other than this clause) relating to food additives shall apply, to any such previously sanctioned or approved use of a substance if, on the basis of the information then available, the Secretary finds that, for the reasons set forth by him, there is reasonable doubt as to its safety. Except when the Secretary finds that there is an imminent hazard to public health, he shall take such action only in conformity with section 4 of the Administrative Procedure Act if such prior sanction or approval had been made public, and only after sending reasonable notice of his proposed action and the reasons therefor to any person on whose application such prior sanction or approval had been granted and any other person who had been officially advised thereof unless such personal notice is impracticable.'"

We have no objection to this proposal since it deals only with sanctions or approvals granted by the Secretary of Health, Education, and Welfare under the Food, Drug, and Cosmetic Act and would not affect the authority of this Department or the impact of actions taken by it under programs which it administers.

The Bureau of the Budget advises that there is no objection to the submission of this report.

Sincerely yours,

TRUE D. MORSE, *Acting Secretary.*

[Immediate release, May 14, 1960, Anne Wheaton, Associate Press Secretary to the President]

THE WHITE HOUSE

The White House today made public the report of a study of certain aspects of the use of chemicals and drugs as food additives, which the President requested to be made by the Departments of Agriculture, and Health, Education, and Welfare, and the President's Science Advisory Committee.

In making this study, the Science Advisory Committee convened a special panel of experts and consulted scientists from the Agriculture and Health, Education, and Welfare Departments and also outside Government circles.

Findings of the study were approved by the President's Special Assistant for Science and Technology, Dr. George B. Kistiakowsky, and also concurred in by the Departments of Agriculture, and Health, Education, and Welfare.

The report describes the complex nature of the scientific issues involved in protecting the food supply from added cancer-producing substances. It suggests areas of research and also recommends improved administrative procedures.

THE PRESIDENT'S SCIENCE ADVISORY COMMITTEE,
Washington, D.C., May 9, 1960.

REPORT OF THE PANEL ON FOOD ADDITIVES

INTRODUCTION

Americans today are better fed and in better health than at any time in history. This fortunate position derives from the rational exploitation of national resources through manifold applications of scientific research. The integrated contributions of the engineering, agricultural, and chemical sciences have resulted in increasing quantities of uniformly high quality and pure foods which have contributed demonstrably to the physical well-being of the Nation. Greatest strides have been made during the past 50 years, partly as a result of the use of a broad spectrum of chemical substances in support of the entire pattern of food production, processing, and preservation. These include: Chemical fertilizers, insecticides, herbicides, antibiotics, preservatives, larvacides, fungicides, and hormones, among others. Some are essential to the efficient production of crops and livestock, others are vital in assuring adequate and continuing supplies of pure, nutritious, and appetizing foods.

Paralleling modern developments in food production have been those in safeguarding the purity of foods. A variety of Federal and State agencies have been established for the purposes of assuring that foods which reach the consumer have been produced, handled, and processed under such conditions that they are wholesome and safe for human consumption. Producers and processors of foods have cooperated in this endeavor in the recognition that they, too, have a responsibility for public health and welfare.

Recently there has been public preoccupation with reports that certain chemical food additives have been shown to be carcinogenic (cancer producing) under laboratory conditions when ingested by experimental animals. Several such compounds have been withdrawn from the market; and new legislation has been enacted specifically dealing with carcinogenic food additives. As a result of this legislation, many questions of interpretation have arisen. The President's Science Advisory Committee has been asked to convene a special panel to review the scientific issues and problems in relation to public policy.

The panel had the opportunity to discuss the varied aspects of carcinogenic food additives with representatives of the Department of Health, Education, and Welfare, including the Public Health Service and Food and Drug Administration, and with the Department of Agriculture as well as with experts outside of Government. The panel has also studied prepared statements pertinent to the subject, congressional committee reports, monographs, and published scientific literature (app. A).

Consumers expect safe, wholesome food of good quality and they rely on Government, as set forth in the laws, to maintain sufficient controls to meet this

expectation. Government must, can, and does act in maintaining this objective.

Careful regulations have been provided to guard the health of the public from unwitting exposure to toxic chemicals in foods, through the Federal Food, Drug, and Cosmetic Act, the Federal Insecticide, Fungicide, and Rodenticide Act and the Federal Meat Inspection and Poultry and Poultry Products Acts (app. B). These protections are implemented by the staffs of the Department of Health, Education, and Welfare and the Department of Agriculture.

Under the food additives amendments of the Federal Food, Drug, and Cosmetic Act, the Secretary of the Department of Health, Education, and Welfare may establish regulations prescribing, with respect to one or more proposed uses of the food additive involved, the conditions under which the additive can be used. The act provides, however, that no such regulation shall be issued if a fair evaluation of the data before the Secretary fails to establish that the proposed use of the food additive, under the conditions of use to be specified in the regulation will be safe. Accordingly, the Food and Drug Administration has an area of administrative discretion in determining the safety of food additives under conditions of proposed use.

This area of administrative discretion has recently been greatly narrowed in those cases where a new food additive is possibly carcinogenic. In 1958, Congress enacted the food additives amendment of the Food, Drug, and Cosmetic Act. Section 409(c)(3) (hereinafter referred to as sec. 409(c)) of the amendment states that "no additive shall be deemed to be safe if it is found to induce cancer when ingested by man or animal, or if it is found, after tests which are appropriate for the evaluation of the safety of food additives, to induce cancer in man or animal." The panel has focused attention on this proviso which, under the language of the food additives amendment, is concerned chiefly with new substances.[1] The emphasis on new substances considerably narrows the effect of the proviso on industry and the public.

The panel subscribes to the intent of the Congress in approving this section of the food additives amendment to protect the public from increasing cancer risks through the diet. However, there are certain difficulties in its practical application—difficulties which give rise to many uncertainties both on the part of the public and those whose responsibility it is to administer the law.

SCIENTIFIC ISSUES

Several scientific problems raised by section 409(c) have been examined in detail by the panel. These are:

1. Problem of recognition of a carcinogenic food additive

Section 409(c) of the food additives amendment under consideration classifies as unsafe any new substance or one not previously evaluated for its safety "if it is found to induce cancer when ingested by man or animal * * *." It is to be noted that a finding of cancer induction in man or animal must be made as a prerequisite to banning of the additive in question. This recognizes the fact that the present state of scientific knowledge does not permit an a priori assumption of the carcinogenicity of a chemical. Since tests on animals or observations on man must be carried out to determine the capacity of an additive to induce cancer, it is pertinent to examine the procedures in current usage to recognize a carcinogen for man and/or animals.

(*a*) *Recognition in man.*—The recognition of chemically induced cancer in man is based on circumstantial evidence. Although cancer morbidity may be in part related to environmental carcinogens, these have not been specifically identified in most instances because of the numerous, varied, and often unrecognized environmental factors to which man has been exposed. When, however, certain limited populations have had, through their specialized occupation, a concentrated exposure to specific environmental factors, it has been possible in a number of instances to obtain evidence indicative of a causal relationship between the specific environmental factor and the induction of cancer. Examples

[1] Congress, in defining "food additives" in the Food, Drug, and Cosmetic Act, expressly provided that the entire food additives amendment does not apply to:

(*a*) Any substance which under the conditions of its intended use is generally recognized as safe by competent scientific experts on the basis of scientific procedures (or for substances used in food before Jan. 1, 1958, on the basis of either scientific procedures or experience based on common use in food).

(*b*) Any substance previously sanctioned or approved under the Food, Drug, and Cosmetic Act, the Poultry Products Inspection Act, or the Meat Inspection Act.

of this include urinary bladder cancer among workers in the dye industry exposed to 2-naphthylamine, lung cancer among chromate industry employees, and skin cancer among those engaged in the paraffin pressing operation in oil refineries.

The recognition of the relationship between an environmental factor and an increased frequency of a particular type of cancer in these examples rested on a marked difference between exposure of the individuals involved and the general population. Since, by contrast, exposure to food additives is general throughout the population, it is unlikely that carcinogenic properties would be recognized from examination of data obtained on man. From a practical standpoint, therefore, the indication of possible carcinogenicity to man of chemical additives must come from observations on laboratory animals or on persons exposed to unusual amounts of these chemicals during their manufacture or use, or in the treatment of disease.

(*b*) *Definition of induced cancer in animals.*—The recommended procedure for testing the possible carcinogenicity of a chemical additive calls for its incorporation into the diet of several animal species, at several dosage levels, and for the duration of the animals' lifespan where feasible. Like all biological assay methods, this procedure has more inherent variables than do procedures involving physical and chemical methods. Further, the recognition of a carcinogen by the bioassay technique presents greater difficulties of interpretation than are usually encountered in assaying the effects of other pharmacologically active substances. These difficulties of interpretation are related to the identification of the tumor as a cancer, and to the way in which the experiment is designed.

The criteria for defining whether or not a "cancer" has been induced in the experimental animal are varied. They include the microscopic appearance of the tumor (histopathology), its ability to metastasize, its transplantability to other animals of the same species or inbred strain and its local invasiveness. The most commonly employed criterion is the histopathological diagnosis. However, this depends on the judgment of pathologists and diversity of opinion among them is not uncommon. A further difficulty emerges from the fact that not all tumors are cancers and that there is difference of opinion regarding the possible, subsequent malignancy of at least certain benign tumors. (Appendix C.)

The design of the experiment is important in the recognition of a carcinogen by laboratory methods. The chapter on carcinogenicity screening in the monograph of the Food and Drug Administration [2] clearly presents factors which may influence the results of tests. These include the dose levels which may be too high as well as too low, thereby masking carcinogenic potentiality through nonspecific toxicity; the necessity to conduct tests in several species and in the same species in more than one inbred strain in order to avoid drawing general conclusions based on species or strain-specific susceptibility or resistance to the induction of cancer; the need for careful biometric planning so that appropriate numbers of animals are included in both experimental and control groups to allow precise statistical interpretation of the results.

2. Problem of the relation of dose to cancer production in man

Section 409(c) of the food additives amendment of the Food, Drug, and Cosmetic Act prohibits the approval of a food additive regardless of the amount that is found to be required to increase the incidence of cancer in test animals. A literal interpretation of the section must lead to the prohibition of such a substance even though present in trace amounts. Since new substances will be evaluated by animal tests, in practice the prohibition is based on the assumption that a substance which increases the incidence of cancer when included in the diet of animals at any dose level may increase the incidence of cancer when included in the diet of man even when present in amounts detectable only by the most sensitive analytical techniques. For a number of carcinogens that have been studied, however, there is evidence for the existence of a level of ingestion at which no carcinogenesis occurs during the life of the animals when tested in limited numbers. Also, dose-response curves for certain potent carcinogens in animals have been worked out from which can be reliably predicted the probability of an individual, in a given-sized population, developing a tumor from a given dose of carcinogen. Such curves lead to the conclusion that dietary levels of carcinogenic agents exist at which the probability of cancer induction in animals is near zero.

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[2] "Appraisal of the Safety of Chemicals in Foods, Drugs, and Cosmetics," Food and Drug Administration, 1959, pp. 79–82.

The conclusion derived from animal studies has relevance to certain common components of the diet of man. In foodstuffs, as they occur in nature, one finds traces of chemicals which in larger amounts are generally accepted as carcinogenic, such as certain inorganic arsenic compounds, radium and selenium. It can be shown by methods of analysis now available that ordinary table salt derived from rock salt contains trace amounts of radium and that foodstuffs containing iron salts are contaminated by minute quantities of arsenic. Although it cannot be stated absolutely that these traces of carcinogenic materials have never induced cancer in any human, the available evidence has not directed suspicion to these trace amounts as significant to the overall cancer morbidity.

There is additional evidence which indicates that a dose-response relation for carcinogens exists in man. Thus, the bladder cancer incidence rate in those exposed to 2-naphthylamine (to which reference was made earlier in this report) was highest among those most intensely exposed among several groups of workers in the dye industry. Another example of the existence of the relation of dose of a carcinogen and duration of exposure to cancer production is creosote to which there is widespread exposure of workers in several trades. Although it has been demonstrated that creosote can produce skin cancers in mice and men, the frequency with which this has been observed in man is very low and only in those persons exposed to high amounts of the material over prolonged time periods. Finally, there is some indication in the literature that the frequency of cancer induction in man might be decreased by reduction of the amount of exposure to a particular carcinogen. Examples of this are the absence of reports of skin cancer in paraffin pressing operators in oil refineries following the introduction of hygienic practices, and the reduction of nose cancer in nickel industry workers following the introduction of dust control measures. In these examples, it can reasonably be assumed that there has been a reduction in the exposure to the carcinogen rather than a complete removal of the cancer-producing substance.

From the experience obtained in animal experiments and study of humans who have been exposed to carcinogens in the course of their work such as cited above, the panel believes that the probability of cancer induction from a particular carcinogen in minute doses may be eventually assessed by weighing scientific evidence as it becomes available.

3. Problems in the administration of section 409(c)

(*a*) Special problems might arise when substances useful in trace amounts but carcinogenic in large doses are considered:

(*i*) Selenium consumed for long periods in considerable amounts by animals will produce liver cancer. Selenium is reported on the other hand to be an essential nutrient element (at a level of 1 part per million) in the diet of lambs;

(*ii*) Certain inorganic arsenic compounds have been indicated as carcinogenic. When organic arsenicals are added as chemotherapeutic agents to animal feed, some inorganic arsenic is released;

(*iii*) Polyoxyethylene stearate fed to rats at a level of 25 percent of the diet (but not at lower levels) produced urinary bladder stones which induced bladder tumors, some malignant. Since the cancers are always associated with the presence of stones, minute traces in the human diet are not likely to produce bladder cancer, and can be treated as any other toxic material.

This list of examples may be expected to lengthen and each case requires scientific judgment to determine the issues involved.

(*b*) A different problem arises when carcinogenic substances are permitted to be used in agriculture and food industry under such conditions that they are absent from human food products. Any assay method used to determine the presence or absence of particular substances in human food has only a finite sensitivity of course. In the effort to improve the sensitivity of the assay, resort may be had to modern indirect methods, such for instance as bioassay or radioactive tracers. A large gain in sensitivity is sometimes obtained partially at the cost of certainty that the substance detected is indeed the original carcinogen. Scientific judgment as well as the rule of reason are required to decide what is a proper and adequate assay method.

CONCLUSIONS AND RECOMMENDATIONS

The rapidly increasing number of new chemicals potentially useful in agriculture and food production demand vigilant and careful scrutiny of the com-

pounds offered in order to safeguard the consumer from those that may present carcinogenic and other toxic hazards.

In applying the provisions of section 409(c)(3) of the food additives amendment of the Food, Drug, and Cosmetic Act, the enforcing agency must employ the "rule of reason" [3] based on scientific judgment in order to carry out the intent of the Congress to protect the public from the possibility of increasing cancer risks through the diet.

The definition of a carcinogen implicit in the language of section 409(c) requires discretion in its interpretation because so many variables enter into a judgment as to whether a particular substance is or is not carcinogenic.

It is to be emphasized that the present difficulty in establishing whether there are permissible levels for certain possibly carcinogenic food additives is accentuated by the limited relevant scientific information available. From the experience obtained in animal experiments and study of humans who have been exposed to carcinogens in the course of their work such as cited above, the panel believes that the probability of cancer induction from a particular carcinogen in minute doses may be eventually assessed by weighing scientific evidence as it becomes available.

The special emphasis placed by the Congress on the protection of the public from the dangers resulting from the addition of possible carcinogens to food calls for prudent administration of section 409(c) of the food additives amendment of the Food, Drug and Cosmetic Act. Since an area of administrative discretion based on the rule of reason is unavoidable if the clause is to be workable, it is essential that this discretion be based on the most informed and expert scientific advice available. Until the causes of carcinogenesis are better understood, each situation must be judged in the light of all applicable evidence. In this way the protection of public health can best be assured.

Accordingly, the following recommendations are made:

1. That the Secretary of Health, Education, and Welfare appoint a Board advisory to him to assist in the evaluation of scientific evidence on the basis of which decisions have to be made prohibiting or permitting the use of certain possibly carcinogenic compounds.

The advisory Board should be composed of scientists from the National Cancer Institute, the Food and Drug Administration, the U.S. Department of Agriculture, and the scientists outside of Government from a panel nominated by the National Academy of Sciences.

It would be the function of the Board to weigh evidence and to make recommendations to the Secretary of the Department of Health, Education, and Welfare on the basis of available scientific data, both on applications for approval of new food additives and in all cases where the withdrawal of a prior approval or sanction is under consideration. The Board would consider among other matters:

(*a*) Whether or not the tests for carcinogenicity are appropriate and reasonable,

(*b*) Whether the substance is or is not in reality carcinogenic as determined histopathologically or by other criteria,

(*c*) Whether addition of the substance to agricultural products would result in a concentration of the substance above the natural background level of such substance.

(*d*) What assay techniques are appropriate to determine whether a specific carcinogen is present in food.

It would also be the function of this Board to review from time to time its recommendations and to modify them in the light of new scientific knowledge. Further, the Board would assume the responsibility of recommending to the Secretary of Health, Education, and Welfare specific research problems to be undertaken to provide necessary scientific data.

2. If existing legislation does not permit the Secretary of Health, Education, and Welfare to exercise discretion consistent with the recommendations of this report, it is recommended that appropriate modifications in the law be sought.

3. Because of the limited scientific information available relevant to the effects of possible carcinogenic food additives, it is recommended that:

(*a*) Proportionately greater emphasis be placed by Government agencies on the study of representative carcinogens in a variety of animal species

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[3] "Every statute must be interpreted in the light of reason and common understanding to reach the results intended by the legislature." Opinion handed down by Chief Justice Warren in *Rathburn* v. *U.S.* (355 U.S. 107 at 109).

in an attempt to define dose-response relations. It must be recognized from the very nature of such research that definitive answers useful in extrapolation to man may not be expected for many years to come. The applicability of such research to the problems discussed in this report will be furthered by studies carried out on large groups of animals.

(*b*) Studies be increased on the possible carcinogenic action of substances to which numbers of individuals have been regularly exposed and that these studies be related to the incidence of cancer in the exposed individuals. Restrospective studies should also be made of patients who have received a variety of chemical compounds, in the course of treatment of disease, which are subsequently suspected of being carcinogenic.

4. Research be expanded also by the Department of Agriculture, by the State agricultural experiment stations, and by industry to discover additional safe and effectiveness materials for the production and processing of foods.

Dr. Detlev W. Bronk, chairman, president, Rockefeller Institute and president, National Academy of Sciences.

Dr. Robert F. Loeb, vice chairman, Bard professor of medicine, Columbia University, on leave.

Dr. Edwin B. Astwood, professor of medicine, Tufts University School of Medicine, New England Center Hospital.

Dr. Alfred Gellhorn, director of the Institute of Cancer Research and professor of medicine, Columbia University.

Dr. J. George Harrar, vice president, the Rockefeller Foundation.

Dr. Harold C. Hodge, professor of pharmacology and toxicology, University of Rochseter.

Dr. James G. Horsfall, director, the Connecticut Agricultural Experiment Station.

Dr. C. N. Hugh Long, Sterling professor of physiology, Yale University.

Dr. C. Chester Stock, scientific director, Sloan-Kettering Institute for Cancer Research.

Consultant, Mr. Charles S. Rhyne, Rhyne & Rhyne, Washington, D.C.

Technical assistant: Dr. Frederic Holtzberg, the President's Science Advisory Committee, the White House.

APPENDIX A

SELECTED REFERENCES ON FOOD ADDITIVES

"Progress in Clearing Safe Food Additives," a statement by Arthur S. Flemming, Secretary of Health, Education, and Welfare, January 26, 1960.

"Proposed Color Additives Amendment," a statement by Arthur S. Flemming before the House Committee on Interstate and Foreign Commerce, U.S. House of Representatives, Tuesday, January 26, 1960.

"Aminotriazole in Cranberries," a report presented by Arthur S. Flemming to the Committee on Interstate and Foreign Commerce of the House of Representatives on actions taken with respect to aminotriazole and stilbestrol.

"The Role of Certain Chemical and Physical Agents in the Causation of Cancers," by G. Burroughs Mider, M.D., Association Director in Charge of Research, National Cancer Institute, National Institutes of Health, Public Health Service, Department of Health, Education, and Welfare, January 26, 1960.

"Chemicals and Food Safety," a statement by E. L. Peterson, Assistant Secretary of Agriculture.

"Insignificant Levels of Chemical Additives in Food," reprint from the July 1958 issue of Food, Drug, Cosmetic Law Journal, the Scientists' Forum, edited by Bernard L. Oser.

Reports of the National Academy of Sciences, National Research Council:

"Problems in the Evaluation of Carcinogenic Hazard From Use of Food Additives," Food Protection Committee, Food and Nutrition Board, December 1959.

"Principles and Procedures for Evaluating the Safety of Intentional Chemical Additives in Foods," a statement prepared by the Food Protection Committee of the Food Nutrition Board, November 1954.

"Food-Packaging Materials Their Composition and Uses," a report of the Food Protection Committee, November 1959.

"Hormonal Relationships and Applications," publication 714, a report of the Committee on Animal Nutrition, 1959.

"Safe Use of Pesticides in Food Production," a report by the Food Protection Committee on the Food and Nutrition Board, November 1956.

"Statement on What We Know About Possible Relationships Between Cancer and Food Additives," Food Protection Committee, December 1956.

"Regulations for the Enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act," issued March 1948, U.S. Department of Agriculture.

"Interpretation of the Regulations for the Enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act," issued August 1948, U.S. Department of Agriculture.

"Federal Food, Drug, and Cosmetic Act—as Amended," U.S. Department of Health, Education, and Welfare, Food and Drug Administration.

"Appraisal of the Safety of Chemicals in Foods, Drugs, and Cosmetics," edited and published by the Editorial Committee, Association of Food and Drug Officials of the United States, Food and Drug Administration.

APPENDIX B

The various bureaus of the Departments of Agriculture and Health, Education, and Welfare have long worked in close association with each other and with corresponding State and local government agencies to guard the food supply. The highly trained scientific and technical manpower in these bureaus work in unison. The Departments of Agriculture and Health, Education, and Welfare administer laws that regulate the purity of food.

The Department of Agriculture administers:

(*a*) The Federal Insecticide, Fungicide, and Rodenticide Act which requires the registration of economic poisons (pesticide chemical formulations such as insecticides) shipped interstate. Before registering an economic poison, the Department determines, among other things, that its label bears directions for use which, if followed, are adequate to protect the public. The Department investigates interstate shipments of economic poisons to insure compliance with the requirements of the act. In case of violations, it may seize the merchandise and prosecute the responsible party.

(*b*) The Federal Meat Inspection and Poultry and Poultry Products Acts which gives the Department authority to determine, by regulation, what chemicals are safe and may be used in establishments producing red meat, poultry, and products containing them for interstate commerce. Under the continuous inspection of meat, poultry, and their products produced for interstate commerce, the Department has authority to condemn and prevent the movement of any such materials found to be unwholesome. In addition, the Department may cause prosecution of any person shipping meat, poultry, and their products in interstate commerce which have not been inspected for wholesomeness in compliance with the requirements of the act.

The Department of Health, Education, and Welfare:

(*a*) Approves labeling of new drugs and drugs containing antibiotics for veterinary use; in this way it determines that when shipped these drugs bear directions for use that guard against contamination of food from treated animals with hazardous drug residues (secs. 505 and 507 of the act).

(*b*) By regulation establishes tolerances for the residues of toxic pesticides (insecticides, fungicides, herbicides, etc.) that may safely remain on crops when they are marketed in interstate commerce (sec. 408 of the act, also known as the pesticide chemicals amendment).

(*c*) By regulation establishes safe conditions for use of food additives in food processing or handling, including chemicals for use in or on meat or poultry (sec. 409 of the act, also known as the food additives amendment).

In general, the person who wishes to promote a toxic chemical for uses that may leave small amounts in food must establish the safety of the proposed uses. He does this under the Federal Food, Drug, and Cosmetic Act by conducting appropriate laboratory tests to determine:

(i) How much of the chemical or toxic materials resulting from its use will remain in food. It is essential in this connection to have an analytical method, usable for enforcement purposes, for detecting excessive amounts should they occur in food in commercial practice.

(ii) What the effect of various dosages is on test animals.

(iii) That there is an adequate margin of safety between the toxic level of the chemical and the level proposed in food.

The promoter then furnishes these tests results to the Department of Health, Education, and Welfare with a request for approval of his proposed use. Only when the Department grants approval may the product be employed legally. (The detailed procedures for approval vary depending upon whether the product is, by definition in the law, an antibiotic, a new drug, a pesticide chemical, or a food additive.)

If the chemical is an antibiotic veterinary drug or new drug or a pesticide to be used on animal or plant crops so that no residue remains on food as it is marketed, the promoter must show the Department of Health, Education, and Welfare (for antibiotics or veterinary drugs) or the Department of Agriculture (for pesticides) that under the proposed directions there will be no residue.

Evaluating the safety of chemicals added to food is extremely complex. Intensive scientific exploration in numerous laboratories develops new information almost daily. Inevitably there will be occasions in which the Government must rescind some of the authorizations it has granted for use in chemicals.

APPENDIX C

EXTRACTS FROM "APPRAISAL OF THE SAFETY OF CHEMICALS IN FOODS, DRUGS, AND COSMETICS," FOOD AND DRUG ADMINISTRATION, 1959

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"For the purpose of this discussion, carcinogens are those substances which produce a significant increase in tumor incidence when administered at any dosage level by any route of administration in any species of animal as compared to controls. Obviously, carinogenic (perhaps tumorigenic would be more correct since not all tumors are malignant) potency may range from very weak to very strong; on a mg/kg dosage basis, 10,000 or more times the quantity of one chemical may be needed than of another * * *"

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"Tumor-producing action is not something that either 'is or is not present' in a compound. In other words, this action is not all black or all white but incorporates a lot of gray. At one end of the scale we have compounds which have not been known to cause any increased incidence of neoplasia in any species by any route of administration with any dosage. And, at the other end, there are the compounds that are readily detectable as potent carcinogens. How should we evaluate the compounds that fall in the 'gray area'? Some cancer workers consider that carcinogenic stimuli are cumulative and irreversible. We have previously defined a carcinogen as a substance that produces a significant increase in tumor incidence when administered at any dosage by any route of administration in any species of animal as compared to controls. We have also indicated that carcinogenesis in one species or by one route of administration does not imply carcinogenesis in another species or by another route of administration. It should be kept in mind that mouse and rat tumor production is greatly influenced by dietary factors. These dietary factors may be either qualitative, as in the case of increased tumor incidence with choline deficiency, or quantitative, such as the pronounced decreases in tumor incidence (in the presence of an equal life span) with caloric restriction. The selection of test animals and the reasons for those chosen have been discussed earlier. What we are principally concerned with is the tumor-producing potential for man. Carcinogenesis is one manifestation of chronic toxicity; but since mechanisms of carcinogenesis are understood less well than the more frequently encountered toxic alterations of the usual chronic experiment, it is prudent to err on the side of caution. Evaluation of the significance for man and tumorigenicity or carcionogenicity in experimental animals when the results are in the borderline area (that is, not negative but not distinctly positive) is most difficult and complex, and demands the combined talents of people in many biological specialties."

(Whereupon, at 12 noon, the hearing was adjourned.)

COLOR ADDITIVES

TUESDAY, APRIL 5, 1960

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The committee met, pursuant to call, at 10 a.m., in room 1334, New House Office Building, Hon. Oren Harris (chairman of the committee) presiding.

Present: Representatives Harris (presiding), Williams, Moulder, Flynt, Macdonald, Dingell, Rogers (Florida), Bennett, Schenck, Younger, Avery, Devine, Keith, Hemphill, Healey, and Curtin.

Also present: W. E. Williamson, chief clerk.

The CHAIRMAN. The committee will come to order.

In resuming consideration of what is referred to as color additives proposed legislation, H.R. 7624 and S. 2197, we are indeed pleased to welcome this morning a most distinguished group of scientific experts, if you gentlemen don't mind my using that term, who will greatly assist the committee in discussing scientific problems involved in this proposed legislation, and with particular emphasis on one provision of the House bill which has caused so much concern in the minds of the American people, namely, the Delaney anticancer clause.

You gentlemen will recall that in the consideration of the Food Additives Amendment of 1958, this provision became a part of that law. Out of the experience we have had with it since that time, it has become necessary in connection with this particular proposed legislation to give further consideration to the problem.

The nationally recognized scientists who have favored us with their presence this morning for the discussion of this problem, and whom we are very glad to welcome, are Dr. William J. Darby, of the department of biochemistry, Vanderbilt University School of Medicine, Nashville, Tenn.

I think you might raise your hand, gentlemen, when I call you so the members of the committee can get you placed.

Dr. Darby is to act as the chairman of this distinguished panel.

Dr. Harold F. Blum, Department of Biology, National Cancer Institute and Princeton University, Princeton, N.J.

Dr. Paul R. Cannon, of the University of Chicago and of Yorkville, Ill.

Dr. Floyd De Eds, of the U.S. Department of Agriculture, Western Utilization Laboratory, Albany, Calif.

Dr. Charles K. Kensler, Department of Pharmacology, School of Medicine, Boston University, Boston, Mass.

Dr. Morton L. Levin, Roswell Park Memorial Institute, Buffalo, N.Y.

Dr. G. Burroughs Mider, Associate Director of the National Cancer Institute, National Institutes of Health, Bethesda, Md.

I might interpolate that Dr. Mider has been before the committee already on this problem when he accompanied the Secretary of Health, Education, and Welfare at the previous hearings.

Dr. James A. Miller, McArdle Laboratory, University of Wisconsin, Madison, Wis.

Dr. Walter E. O'Donnell, Sloan-Kettering Institute for Cancer Research, division of preventive medicine, New York, N.Y.

Dr. Philippe Shubik, division of oncology, Chicago Medical School, Chicago, Ill.

Dr. DARBY. Dr. Shubik is unable to be here, sir. We received a telegram yesterday that it would be impossible for him to attend because of some family increases which are occurring.

The CHAIRMAN. Dr. Harold L. Stewart, National Cancer Institute, National Institutes of Health, Bethesda, Md.

Dr. Albert Tannenbaum, Medical Research Institute, Michael Reese Hospital, Chicago, Ill.

Dr. Mitchell R. Zavon, Kettering Laboratory of Industrial Health, Cincinnati, Ohio.

I say to my distinguished colleagues you can very well see that we have a most distinguished panel here today, and I know you join me in giving them a welcome.

I might say that these gentlemen were named by Dr. Bronk, President of the National Academy of Sciences, pursuant to my request for assistance in establishing a representative panel of expert scientists qualified to discuss the scientific aspects of color additive legislation, particularly the Delaney clause, pending before this committee.

I would like to say that some of the members of this committee were tremendously concerned with the problem as developed in the cranberry incident last year. Some of us are equally concerned with the problem that developed in connection with the poultry business, and many industries in this country are quite concerned with this problem because of the effect it had on that industry in providing food substance to the American people.

So I would like to take the opportunity in behalf of the committee to express our thanks to Dr. Bronk, Dr. S. D. Cornell, executive officer of the Academy; and Dr. Paul E. Johnson, Chairman of the Food Protection Committee of the Academy, for their fine cooperation.

The procedure the committee would like to follow during these hearings will be somewhat similar to that which was used in connection with the Salk vaccine, when we had a panel discussion on that problem in 1955, and then with the food additives panel in 1957. The chairman and members of the panel will introduce themselves and each give a brief statement of his particular qualifications with respect to the scientific aspects of the problem facing the committee. Then we shall have a brief statement from Dr. Darby, the Chairman, and from each of the panel members who will present his views. Following these statements we will have a question period, under the

direction of Dr. Darby, during which the members of the panel will be able to ask questions of each other.

Of course, the members of this committee probably will want to ask some questions of the members of the panel. However, if the subject matter gets too deep for us, why, we will sit back and let you make the record.

The committee has held extensive hearings on the legislation during the past several weeks. The point of controversy which I have indicated and the question on which the committee seeks particular information from you gentlemen is whether or not it is possible to establish safe tolerances for food or color additives known to induce cancer in man or animal.

On page 10 of H.R. 7624—and I hope the clerk has provided each of you with a copy—lines 11 through 22—there appears the following language, which I have said is referred to as the Delaney clause, and I quote:

(B) A color additive (i) shall be deemed unsafe, and shall not be listed, for any use which will or may result in ingestion of all or part of such additive, if the additive is found to induce cancer when ingested by man or animal, or if it is found, after tests which are appropriate for the evaluation of the safety of additives for use in food, to induce cancer in man or animal, and (ii) shall be deemed unsafe, and shall not be listed, for any use which will not result in ingestion of any part of such additive if, after tests which are appropriate for the evaluation of the safety of additives for such use, or after other relevant exposure of man or animal to such additive, it is found to induce cancer in man or animal.

Now, the Senate has approved a bill S. 2197, which does not contain this language or any reference to it. However, the Food Additives Amendment of 1958, Public Law 85–929, contains similar language.

Much controversy has developed during our hearings over this clause. You can readily appreciate that the question of retaining, modifying, or eliminating this provision is one of vital importance to the health of our people. Views of this panel on this question, therefore, will be of tremendous help to us in determining legislative policy.

Now, I would like to introduce Dr. Darby, the chairman of the panel. Doctor, we are pleased to welcome you back. I recall that you were chairman of a previous panel before this committee in 1957. You may proceed as I have outlined.

STATEMENTS OF DR. WILLIAM J. DARBY, DEPARTMENT OF BIOCHEMISTRY, VANDERBILT UNIVERSITY SCHOOL OF MEDICINE, NASHVILLE, TENN.; DR. HAROLD F. BLUM, NATIONAL CANCER INSTITUTE, DEPARTMENT OF BIOLOGY, PRINCETON UNIVERSITY, PRINCETON, N.J.; DR. PAUL R. CANNON, UNIVERSITY OF CHICAGO; DR. FLOYD DE EDS, U.S. DEPARTMENT OF AGRICULTURE, WESTERN UTILIZATION LABORATORY, ALBANY, CALIF.; DR. CHARLES J. KENSLER, DEPARTMENT OF PHARMACOLOGY, SCHOOL OF MEDICINE, BOSTON UNIVERSITY, BOSTON, MASS.; DR. MORTON L. LEVIN, ROSWELL PARK MEMORIAL INSTITUTE, BUFFALO, N.Y.; DR. G. BURROUGHS MIDER, ASSOCIATE DIRECTOR, NATIONAL CANCER INSTITUTE, NATIONAL INSTITUTES OF HEALTH, BETHESDA, MD.; DR. JAMES A. MILLER, McARDLE LABORATORY, UNIVERSITY OF WISCONSIN, MADISON, WIS.; DR. WALTER E. O'DONNELL, SLOAN-KETTERING INSTITUTE FOR CANCER RESEARCH, DIVISION OF PREVENTIVE MEDICINE, NEW YORK, N.Y.; DR. HAROLD L. STEWART, NATIONAL CANCER INSTITUTE, NATIONAL INSTITUTES OF HEALTH, BETHESDA, MD.; DR. ALBERT TANNENBAUM, MEDICAL RESEARCH INSTITUTE, MICHAEL REESE HOSPITAL, CHICAGO, ILL.; AND DR. M. R. ZAVON, KETTERING LABORATORY OF INDUSTRIAL HEALTH, CINCINNATI, OHIO

Dr. DARBY. Thank you indeed, Mr. Harris. First, I should like to express my appreciation for the opportunity of again discussing with you and your committee the scientific considerations which are basic to legislative action aimed at improving and providing our Nation with an abundance of the most wholesome and nutritious food obtainable.

As you know, I have long been interested in many aspects of nutrition. My background started in your own home State, Arkansas. From the University of Arkansas I received an M.D. degree, and subsequently from the University of Michigan a Ph. D. in biochemistry.

At the present time, as you indicated, I am professor and head of the Department of Biochemistry at Vanderbilt University, and director of the division of nutrition of that medical school.

I have since the formation of the Food Protection Committee of the National Academy of Science been on that committee, and at the present I am chairman of the food protection committee, and I am also a member of the Food Nutrition Board of the Academy.

I have for a number of years been a member of the council on foods and nutrition of the American Medical Association.

As a result of interest and attention to some of the questions relative to food additives, I have served as a member—in fact, as chairman of the first joint FAO–WHO Expert Committee on Food Additives.

I wonder if I might ask whether it would save time if in giving the individual statements we had the members of the panel qualify them-

selves at that time, or would you prefer the qualification all at one moment?

The CHAIRMAN. I think, doctor, it would be proper and much better for the record if you could have them listed all together.

Dr. DARBY. All right, sir. We shall do that.

The CHAIRMAN. In order to save time, I think each one of you should file such a statement for the record, and it will appear in the record at this point, if that procedure is all right with you.

Dr. DARBY. Yes, it is perfectly all right. We shall proceed then as you suggested.

The CHAIRMAN. I knew you had an interesting background, Dr. Darby, and for that reason you would be highly qualified for this purpose.

Dr. DARBY. Thank you.

(The statements of background which were furnished are as follows:)

CURRICULUM VITAE

GEORGE BURROUGHS MIDER

Date and place of birth: August 9, 1907, Windsor, N.Y.

Education: A.B., Cornell University, 1930; M.D., Cornell Medical College, 1933.

Professional training and positions held:

Intern, Albany Hospital, Albany, N.Y., 1933–34.

Assistant resident surgeon, Albany Hospital, Albany, N.Y., 1934–35.

Resident surgeon, Albany Hospital, Albany, N.Y., 1935–36.

Assistant in surgery, Albany Medical College, 1935–36.

Assistant resident in surgery, Strong Memorial Hospital, 1936–37.

Assistant in surgery, University of Rochester School of Medicine and Dentistry, 1936–37.

Fellow in surgery, University of Rochester School of Medicine and Dentistry, 1937–38.

Instructor in surgery, University of Rochester School of Medicine and Dentistry, 1938–39.

Research fellow, National Cancer Institute, 1938–41.

Instructor in pathology, Cornell Medical College, 1941–42.

Assistant professor of pathology, Cornell Medical College, 1942–44.

Assistant pathologist, New York Hospital, 1941–44.

Associate professor of pathology, University of Virginia School of Medicine, 1944–45.

Research associate in surgery, University of Rochester School of Medicine and Dentistry, 1945–48.

Professor of cancer research, University of Rochester School of Medicine and Dentistry, 1948–52.

Associate director in charge of research, National Cancer Institute, 1952–.

Board certification: American Board of Pathology, in pathologic anatomy.

Memberships:

American Association of Pathologists and Bacteriologists.

American Society for Experimental Pathology.

Harvey Society.

James Ewing Society.

American Association for Cancer Research; director, 1952–55; chairman, Program Committee. 195: chairman, Finance Committee, 1956–.

Editorial Advisory Board of Cancer Research, 1944–56.

Scientific Advisory Committee, Detroit Institute of Cancer Research, 1952–60.

Gordon Research Conference on Cancer: chairman, 1952, vice chairman, 1951.

Panel on Clinical Investigations, Committee on Growth, National Research Council, 1951–52.

Tumor Registry Committee, American Academy of Pediatrics, 1952–55.

Committee on Occupational Cancer, Council on Industrial Health, American Medical Association: chairman, 1954–.

American Cancer Society; board of directors, 1944–45; board of directors, Monroe County branch, 1950–52; board of directors, New York State division, 1951–52; Advisory Committee on Institutional Research Grants, 1956–58; chairman, Survey Committee, 1958–59.

Editorial Advisory Board, Cancer, 1957–.

American Association for the Advancement of Science.

AAAS Selection Committee for AAAS-Anne Frankel Rosenthal Memorial Award for Cancer Research, 1955–59.

Committeeman-at-large, Section AAAS, 1957–.

Washington Academy of Medicine; Clinico-Pathological Society of Washington.

Cancer Control Committee (National Cancer Institute), and Subcommittee on Environmental Cancer, 1958–.

Advisory Board of the Biomedical Division, the Samuel Roberts Noble Foundation, Ardmore, Okla., 1958–.

CHARLES J. KENSLER

Education:

Columbia College, A.B. Columbia University, M.A. Cornell University, Ph. D.

Research and teaching appointments:

Chemical assistant, Rockefeller Institute, New York, 1938–39.

Research associate, Memorial Hospital, New York, N.Y., 1939–43.

Research for OSRD, 1942–43.

U.S. Army, Edgewood Arsenal, toxicologist POA, 1943–46.

Research fellow, Cornell (Department of Pharmacology), 1946–48.

Instructor, Cornell (Department of Pharmacology), 1948–50.

Assistant professor, Cornell (Department of Pharmacology), 1950–53.

Associate professor, Cornell (Department of Pharmacology), 1953–54.

Head, biological laboratories, A. D. Little, Inc., Cambridge, 1954–57.

Lecturer in pharmacology, Harvard Medical School, 1954–57.

Professor and chairman, department of pharmacology and experimental therapeutics, Boston University School of Medicine, 1957– .

Fellowships:

U.S. Public Health Service, 1947–48.

National Research Council, 1948–49.

Traveling fellow, Oxford University, England, 1949–50.

Sloan Foundation scholar, 1951–54.

Professional society membership:

American Society for Pharmacology and Experimental Therapeutics, American Association for Cancer Research, Harvey Society, Society for Experimental Biology and Medicine, Biochemical Society (England), fellow AAAS. fellow New York Academy of Sciences, New York State Society for Medical Research (president 1952–53), Sigma Xi.

Member of:

Editorial board, Journal American Society for Pharmacology and Experimental Therapeutics, 1957–59.

Drug Evaluation Panel, Department of Health, Education, and Welfare, Cancer Chemotherapy National Service Center, 1957– . Chairman, Pharmacology Committee, 1959– .

Subcommittee on Carcinogenesis of the Food Protection Committee of the National Research Council, National Academy of Sciences, 1957– .

Scientific Advisory Committee on Lung Cancer, American Cancer Society, 1957–59.

Scientific Advisory Committee on Aetiology of Cancer, American Cancer Society, 1959– .

Dr. DARBY. In introducing this subject, I think there are certain objectives which we might try to keep in mind. First, there is that objective which I have just indicated of the need to provide an abundant, wholesome and nutritious food supply for our Nation. To obtain this objective today and in the future we must assure that proper

use is made of the many important and effective means at our disposal for the continued enhancement of agricultural production, of improved food preservation, of improvement in food distribution and improvement in nutritional quality of foodstuffs. It is essential that the complex of agriculture and industry combine for fulfillment of this objective and that they do so within a regulatory framework which assures maximum benefit and maximum health of the consumer, and at the same time permits the introduction of new improvements as these improvements are developed or become possible as a result of scientific progress, whether, indeed, we are thinking of improvements such as new varieties of crops, new methods of culture or new processing procedures.

It was this philosophy which led, in fact, to the establishment of the Food Protection Committee of the National Academy (FPC) in 1950, and this Committee, as you know, has given attention to many aspects of the use of food additives and food additive problems.

I have here only three of the several publications of the FPC which I might call your attention to. One is the so-called green book, "The Use of Chemical Additives in Food Processing," which report of the Food Protection Committee discusses the reasons for use of additives. It lists a large number of additives which either have been used, are in use, or have been proposed for use or possibly could be used. Not all of these are used.

More recently, in 1958, the Food Protection Committee published a report entitled "Food Packaging Materials, Their Composition and Uses," dealing with the matter of food packaging.

Then in December 1959, especially pertinent to the point of this panel, there appeared a report from the Food Protection Committee which is Publication No. 749, of the National Academy of Sciences-National Research Council, "Problems in the Evaluation of Carcinogenic Hazard From the Use of Food Additives." I have brought a number of copies of this, and I hope that they will be distributed to any members of the committee who would be interested in brousing through this publication.

The CHAIRMAN. Do you have copies of this which you can distribute to members?

Dr. DARBY. Yes.

The CHAIRMAN. What is the other one, Dr. Darby?

Dr. DARBY. The other one is "The Use of Chemical Additives in Food Processing." I do not believe we brought copies of this, nor of the food packaging material report, but if you should like copies we will be glad to supply them.

The CHAIRMAN. Very well, we will receive them for the files, and then we will look it over and see whether any part of it should be included in the record, but we will have them in the files and by reference.

Dr. DARBY. The present panel contains some of the members of the Subcommittee on Carcinogenesis of the Food Protection Committee, responsible for developing this report. However, the present panel has a variety of persons who had not been concerned directly with the development of this report and who were not members of the Food Protection Committee. I think you recognize that the panel

has representatives from Health, Education, and Welfare. In fact, it has three such representatives.

Dr. Blum, who is listed from the Biology Department at Princeton, is actually from the National Cancer Institute and is visiting scientist at Princeton at present.

We also have a scientist from agriculture, we have scientists from several universities, and research institutes.

We do not, I should point out, have on the Committee a representative who is directly from industry.

Now, with this background of the Committee, I think we might proceed with asking each member of the panel to introduce themselves briefly and then present whatever statement they should like to make.

I should say that the members of this Committee, although selected by the Academy, are appearing as individuals and not as a Committee of the Academy. Nor are they appearing as representatives of their respective agencies, but as individuals.

Dr. Stewart, would you be willing to identify yourself?

Dr. STEWART. Mr. Chairman and Dr. Darby, my name is Harold L. Stewart. I am from the National Cancer Institute at Bethesda.

Dr. Darby, I have a short summary statement, and then I have a little longer presentation of my views, and I was wondering which you would like me to read. The summary may not mean too much without the longer statement of my views or without the presentation of this point of view. I would be glad to read either one.

Dr. DARBY. I think if you could adjust it timewise to approximately 10 minutes or so, why, that will enable you to choose how much of your long statement you can read.

Dr. STEWART. Thank you very much, Dr. Darby.

Mr. AVERY. Could I ask you to speak up, Dr. Stewart? It is hard to hear in this room. I couldn't hear your colloquy with Dr. Darby, and I would like to hear your statement.

Dr. STEWART. It is not possible to establish a safe dose of carcinogen to be added to food for human consumption. That is my premise. These following comments present my personal views on the legislation presently before the Committee on Interstate and Foreign Commerce of the House of Representatives which is considering two bills; namely, H.R. 7624 and companion bill S. 2197.

I favor the inclusion of the so-called Delaney clause which appears in House bill H.R. 7624, as stated earlier this morning.

I shall summarize my comments under four headings:

1. As I have stated, it is not possible to establish a safe dose of a carcinogen to be added to food and human consumption.

The effect of carcinogen is cumulative and irreversible which prevents the determination of a threshold dose of any one carcinogen for man. Publication 749 entitled "Problems in the Evaluation of Carcinogenic Hazard From Use of Food Additives," published by the National Academy of Sciences-National Research Council, Washington, D.C., dated 1960, contains a good deal of useful information on carcinogensis but it also contains some misstatements and insecure conclusions with which I disagree.

The NAS–NRC publication 749 lists two justifications for using carcinogens as food additives: They are stated to be (1) values to the public are such that banning the use will constitute an important loss

or hardship and (2) there is no reasonable good noncarcinogenic alternative. Justification No. 2 depends on justification No. 1. Justification No. 1 is composed of such abstract words, "important loss," "hardship," that it conveys no meaning. These words sound like reasons to save money or to save work, neither of which are valid excuses to deliberately expose human beings to the risk of cancer. They cannot be considered serious justifications for the introduction of carcinogens into food for human consumption. If justifications are to be stated they should be concrete, definite, positive, and important and be overriding considerations.

While, as stated in NAS–NRC publication No. 749, it has been possible in a few experiments to determine a so-called "safe dose" of a carcinogen for animals, this so-called "safe dose" has not been tested under a variety of experimental models in which co-carcinogens, different vehicles, different solvents, and different strains of different species of animals are employed, all of which may modify the effect of a carcinogen.

It may be argued that since minute doses of chemicals that are toxic but not carcinogenic for animals are permitted as food additives, the same plan should be followed by adding carcinogens to food. Without passing judgment whether or not it is justified to add toxic chemicals to foods, I can point out that toxic effects of a chemical differ from carcinogenic effects of a chemical. If not too badly damaged, cells may recover from the toxic effects of a chemical and may thereafter be more resistant to the effects of the same toxic chemical. The effects of carcinogens on the other hand are definitely long lasting, if not permanent, and the likelihood of cancer increases with repeated exposure of tissues to carcinogens.

Furthermore, while it has been possible, under carefully controlled laboratory conditions to administer a single known carcinogen in a dose insufficient to induce cancer in a group of animals, say 10 animals or 50 animals, this would hardly apply to the inclusion of numerous carcinogens in foods to be eaten by the people of the United States indiscriminately. On the same day, and day after day a person might well ingest the same carcinogen in numerous different foods and many different carcinogens in the same and different foods so that it is likely that an individual would end up after a period of time having ingested total doses of carcinogens large enough to induce cancer in him. Added to such exposure to carcinogens in food would be the exposures that the individual sustains from the carcinogens already present from other sources in his environment.

In considering the danger of low doses of carcinogens in human food it is important to consider the response of the human organism in its embryonic and young, immature states. The offspring of female mice that are treated with urethane during their pregnancy will develop lung tumors. The administration of 20-methylcholanthrene to a lactating rat results in the onset of leukemia in her offspring which as pups nursed such a mother. Lung tumors and subcutaneous sarcomas are more readily induced in mice that are treated with a carcinogen during the first day or first few days of life, than they are if treated with the carcinogen at a later age. All of these points to the extreme danger that may result from the exposure of human beings to carcinogens during the embryonic, fetal and infantile periods of life and adult life.

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Thus, if carcinogenic food additives are permitted, the human population may be exposed to the same and different carcinogenic agents from single foods and from several food sources. To these must be added the environmental carcinogens. All of these carcinogens may exert synergistic actions on each other so that human beings are therefore exposed to a degree of contact with carcinogenic agents that can neither be quantitatively or qualitatively determined nor effectively controlled as long as present.

2. Repeated minute does of mixtures of carcinogens may operate through the mechanisms of addition, summation, potentiation, and synergism. By the administration of a mixture of two carcinogens to animals it is possible to markedly increase the yield of tumors over that induced by either carcinogen given alone. Thus, two weak carcinogens injected together may show definite summation of carcinogenic effects if not synergistic action. The tumor yield from the combined carcinogens may be greater than the sum of their individual yields despite the halfing the dose of each compound injected. Two powerful carcinogens mixed together and injected may show an additive effect.

3. The results of animal tests for carcinogenic potency of agents or substances are significant for human beings just as are toxicity, microbiologic, and pharmacologic tests in animals significant for human beings.

Animal experimentation provides the only known method available for determination of carcinogenic nature and potency for chemical substances or other agents suspected to be carcinogenic for human beings. The results of animal experiments are widely used in human medicine. If tissues from a human being suspected to have tuberculosis produce tuberculosis upon injection into guinea pigs, a diagnosis of tuberculosis is made in that individual. Monkeys are used to determine the safety of different batches of the Salk vaccine for inoculation of human beings against poliomyelitis. Chemicals toxic for human beings are toxic for animals also; bichloride of mercury kills an animal just as it kills a human being. So that before suspected toxic agents are added to food or used as a drug they are first tested in animals, and their use in food or as a drug is determined by the results of the experimentation in animals. The pharmacologic actions of drugs are the same in animals as in man. Substances known to produce cancer in man can produce cancer in animals. All the types of tumors known to occur in man from radiations occur in animals and more too. Not only ionizing radiations, but ultraviolet radiation, soot, coal tar, shale oil, aromatic amines, creosote, chromates—all carcinogens for human beings, also produce cancer in experimental animals. And so it is fully justifiable to regard the results of animal tests for carcinogens as being significant for the human problem.

Other experimental models should be added to those described in NAS–NRC publication 749 and these are: (1) The administration of suspected carcinogens to pregnant animals to determine whether the offspring of such mothers will develop cancer in a higher than expected incidence—some children are born with tumors and so it can be concluded that human fetuses and embryos are exposed to carcinogens in utero; (2) the administration of suspected carcinogens to lactating mothers to determine whether the pups that nurse such

mothers will develop a higher incidence of cancer when they grow up; (3) 24-hour-old baby animals and adolescent animals should also be added as experimental test objects. Day-old mice are more susceptible to carcinogens than are mice 1 week old or 3 weeks old and mice of all three ages are more susceptible to carcinogens than are mice 1 year old.

An example of the importance of experimental information from animals on the problem of human carcinogenesis is exemplified by the studies of the radioactive substance thorium dioxide in thorotrast. Thorotrast injected subcutaneously in mice induces sarcomas but extrovosated subcutaneously in man is not apt to; however, thorotrast injected intraveneously into man produces multiple sarcomas at different sites. The NAS–NRC publication 749 is too conservative in the animal models it recommends for the experimental testing of agents for carcinogenesis. It recommends, for example, that dogs under test be kept only for a period of 4 years, that is only one-third of their life span. Experience has taught us that dogs exposed to potent carcinogens may not develop tumors unless they are maintained under exposure for periods of 7 or 8 years. This has been found to be true following the administration of benzidine and 2-acetylaminofluorene. Benzidine is doubtlessly highly carcinogenic for man but seems to be rather weakly carcinogenic for dogs, and 2-acetylaminofluorene which is a highly potent carcinogen for rats needs to be given in massive doses to dogs to induce tumors in them after a latent period of 7 to 8 years.

I would recommend the intravenous injection of the suspected carcinogen into experimental animals because it was by this method that the carcinogenicity of beryllium was first demonstrated in rabbits. I would further recommend the repeated injection of the suspected carcinogen by the subcutaneous route for two reasons: The suspected agent may be absorbed from the tissues and needs to be replenished and, furthermore, it has been shown that the same dose of a carcinogen administered subcutaneously may be considerably more potent if given as repeated small doses than it is if given as a single dose. Some test animals exposed to suspected carcinogens should be maintained on different types of poor dietary regimens. It has been shown in experiments that the potency of a carcinogen can be considerably enhanced by the maintenance of experimental test animals on inadequate diets, such as diets composed of poor quality protein or low in thiamine or low in protein. After all, not all human beings who ingest food that might be contaminated with carcinogens enjoy a complete nourishing diet. Many human beings suffer from malnutrition because of inadequate diet or because of chronic illnesses. It is therefore important to reduplicate in the animal test studies, conditions which actually exist in the human population.

We are inclined to think that carcinogens always act directly on the tissues exposed to them but we need to remember that carcinogens administered by the gastrointestinal tract may produce cancer in many sites besides the gastrointestinal tract. Some of these sites are lung, pancreas, mesenteric lymph nodes, salivary glands, brain, thyroid gland, ear duct, liver, kidney, and uterus. Just why this is so we do not know but the probabilities are that the mechanism of carcinogen-

esis is not always as direct as that of skin cancer induced in man whose skin is splashed with carcinogenic shale oil.

In addition to the experimental test models described in NAS–NRC publication No. 749 suspected carcinogens should be administered in a variety of solvents because the vehicles in which carcinogens have been administered have been shown to be of great importance in the determination of the site and incidence of induced cancers. A variety of cocarcinogenic agents should also be employed in connection with the suspected carcinogen under test. The philosophy should be to use every possible means to enhance the carcinogenic potency of a chemical under test because such situations will obtain when human populations ingest or are exposed to carcinogens in food.

NAS–NRC publication No. 749 discuses briefly the use of the epidemiological method to study environmental carcinogens. Methods in addition to those discussed in this publication might be considered such as epidemiologic comparison with populations outside the United States of America, and between industrial and nonindustrial populations. Whereas in the United States roughly 25 percent of spontaneous tumors occur in the gastronintestinal tract, principally in the stomach and colon, this is not true in some other populations. In the Negro populations of the native townships in the environs of Johannesburg, South Africa, the South African Bantu has considerably less cancer of the stomach and intestine than U.S. nationals, white or Negro. Of 331 tumors collected over a 3-year period from a population of 100,000 Negroes in Lourenco Marques, Mozambique, only 5 tumors involved the following sites: Bronchus, lung, esophagus, stomach, and intestine. A useful type of epidemiological study that could be applied in the United States would be the study of men and women who are exposed to suspected carcinogenic agents in industry. In women so exposed it would be of the greatest importance also to study their offspring for possible carcinogenic effects on the embryo and on the nursing child.

4. The importance of the avoidance of the deliberate introduction of additional carcinogens into man's environment depends upon the fact that they add to the total carcinogenic load to which human beings are exposed in their environment. Human beings are, under ordinary circumstances in their environment, exposed to a variety of carcinogenic hazards including ultraviolet light, radiation from radioactive fallout, or from radioactive substances in water or food contaminated by deposits of radioactive substances, industrial wastes, exhausts from gasoline and diesel engines, tarred roads, medicines, cosmetics, arsenic, estrogens, DDT, industrially produced consumer goods, environmental industrial pollutants, and exposures of persons through hobbies to paints, pesticides, herbicides, cleaning fluids, and the like. If to these hazardous exposures are added a new variety of carcinogenic food additives, the incidence of cancer that is due to exogenous carcinogens may be expected to rise in the human population of this country.

Dr. DARBY. I hope, Mr. Williams, that your committee will ask questions at any time of our panel and I hope that the members of the panel will feel quite free to participate through discussion, questions, disagreements, or agreement, either immediately after a speaker or at the time that you give your statement.

Mr. WILLIAMS. Dr. Darby, I don't know about your panel, but I don't think that you will find the committee unusually bashful in that respect.

Dr. DARBY. Unless somebody has a question—Mr. Younger?

Mr. YOUNGER. Dr. Stewart, is tobacco carcinogenic?

Dr. STEWART. I don't know whether tobacco is, but tobacco tar is.

Mr. YOUNGER. Are cigarettes?

Dr. STEWART. The tar from cigarettes is carcinogenic.

Mr. HEMPHILL. Mr. Chairman——

Mr. WILLIAMS. Mr. Hemphill?

Mr. HEMPHILL. I enjoyed the presentation, Dr. Stewart. I would like to ask you one question. In the progress we have been making in this country in preventive medicines and antibiotics, is there any relationship between that progress and the growth in the number of people having cancer?

Dr. STEWART. Well, cancer—certain cancers are increasing in this country. It is said that cancer of the lung is on the increase; and certain cancers appear to be decreasing. It is said that cancer of the stomach is decreasing. It is always possible to relate changes like these to certain assurances.

For example, the increase in the use of radios or televisions, the increase in the use of automobiles, increase of cigarette smoking, and so forth, but to relate them to a certain event and have that mean anything you must have proper controls. For example, wearing dentures may be related to these things, or changing the type of footgear from a high type of shoe to a low type.

Mr. HEMPHILL. I was trying to find out if there was any relation between the increase in any type of cancer or cancer generally and the progress we have made in preventive medicine such as antibiotics and the myacines and sulfa drugs, and so on.

Dr. STEWART. Oh, yes; the longer people live the more cancer they develop, and if you save lives and have people living into an old age, whereas formerly they died, say, at ages 30 and 40, there will be much more cancer. Most cancers rise toward the end of life.

Mr. HEMPHILL. But except for the fact that the life expectancy and life realization, the longevity has been increased of mankind, it has no other relation that you know of?

Dr. STEWART. Yes. For example, people who have studied lung cancer relate this to the year people were born. For example, they take all the people who were born, let's say, in 1885, 1886, 1887, and so on, and they show that taking those groups that are called cohorts, and following those groups throughout their lives, the ones who were born later developed more lung cancer, suggesting that they have been exposed more to some carcinogen that produces lung cancer than the ones who were born earlier.

Mr. HEMPHILL. And that tendency is congenital?

Dr. STEWART. Not congenital; no; it is due, we think to the exposure to carcinogens in the environment.

Dr. DARBY. Dr. Levin, would you like to speak at this point?

Dr. LEVIN. I think the Congressman is referring to the post-effect of improvements in medical and preventive care, so that greater numbers of people reach an older age than would be true 20 or 30 years

ago. Now it is quite possible to show, sir, that if that effect is taken into account by considering the number of cases of cancer per 1,000 persons of each age group that there has been a net increase in cancer over the last 30 years in males and a net decrease in females. That is in the mortality chiefly. The increase in cancer which has been observed from the standpoint of the number of cases per 1,000 population has been chiefly in the following forms of cancer: cancer of the lung, cancer of the bladder, cancer of the pancreas, cancer of the kidneys, and in females cancer of the ovary. There seems to be a real decrease of cancer of the stomach, both in the males and females. With the exception of cancer of the lungs, which is definitely tied up with the use of tobacco, there are not very good explanations for these increases in cancer in the human population, but they cannot be explained as entirely due to increased longevity.

Mr. HEMPHILL. Thank you, Mr. Chairman.

Mr. WILLIAMS. I would like to ask Dr. Stewart a question to follow up Mr. Younger's question. You made the statement that the tars, tobacco tars, are carcinogenic. Does it follow that you are in a position to state that smoking can be the approximate cause of cancer?

Dr. STEWART. No, I can't.

Mr. WILLIAMS. Then in what manner are these tobacco tars applied? In other words, what manner of application is required in order to prove they are carcinogenic?

Dr. STEWART. That is quite a difficult thing. You find people in this country, some of whom believe that smoking cigarettes is a cause of cancer, others who don't believe they are a cause of cancer of the lung, and some people who don't know for sure. I don't know the answer to that. I have read a good deal of this. I have done some experiments on it myself. Cigarette tar is certainly carcinogenic if it is painted on the skin of mice.

Mr. WILLIAMS. That is the point I wanted to make. Is there any proof that tobacco smoke inhaled by mice will induce lung cancer?

Dr. STEWART. I did an experiment on that a number of years ago in which mice were exposed to cigarette smoke in a chamber for many months and, as a matter of fact, the experimental animals had less lung cancer than the control animals, so you can understand my natural reluctance to accept the statement of many of my colleagues that cigarette smoking is the cause of lung cancer in human beings. Of course, one person is working with human beings and one with mice.

Dr. DARBY. Don't you think this is an example of one of the things that plagues us in work of this sort: That is the difficulty of translating studies or findings from one species to another? What is carcinogenic in one species is not always carcinogenic in another, just as you have indicated here. And sometimes that which is not carcinogenic in one species is carcinogenic in another.

Dr. STEWART. I didn't say that tobacco smoke is carcinogenic in one species and not in another. I said I am not sure that cigarette smoking is the cause of lung cancer. I said that tar from cigarettes caused cancer when painted on the skin of mice, but when inhaled doesn't cause cancer of the lung in mice that I tested.

Now whether cigarette smoking may be carcinogenic on the human lungs, as I say, I don't know.

Dr. DARBY. Without judging this, though, is it not true that you have great variation between species in testing, not just tobacco smoke, but other things?

Dr. STEWART. You mean for testing carcinogens?

Dr. DARBY. Yes.

Dr. STEWART. You can paint methylcholanthrene on the skin of mice or rats and get cancer and tumors in 100 percent of the mice but none in the rats. If you inject the methylcholanthrene subcutaneously in rats and mice both species develop sarcomas. You have to consider the species, the tissue affected, the solvent, the general condition of the animal and so forth. There is a great deal of variation in experimental carcinogens.

Mr. YOUNGER. I think you brought up a rather interesting point there that has puzzled some of us. I would judge that in your tests, if you were testing smoke from tobacco, you would probably get some coal tar in it, some small particle, probably. Isn't that true?

Dr. STEWART. In the lungs of these mice that I tested you could see tar in them. I could demonstrate it.

Mr. YOUNGER. All right. Now if that was controlled by the Delaney amendment, then you would have to prohibit that, wouldn't you, even though you say that it is safe?

Dr. STEWART. I can't say it was safe. No, I didn't say it was safe.

Mr. YOUNGER. I understood you to say that it was safe.

Dr. STEWART. No, I didn't say that it was safe. I said it didn't produce cancer in those mice and I said that I don't know whether cigarette smoking is a cause of human cancer or not. That is my position. I wouldn't say that smoking cigarettes is safe for human beings or for mice. As a matter of fact, it made mice pretty sick. They didn't look very good.

Mr. YOUNGER. The point that I make is that you test tobacco and you find coal tar, a test of coal tar even though in a very minute quantity, and you say that, at least as far as you know, it didn't breed cancer.

Dr. STEWART. In the lung.

Mr. YOUNGER. But you take cranberries and if you test and get a very minute sample—one in a million, one in a billion—of a carcinogenic substance, there under the Delaney amendment it is thrown out. I was wondering where the difference lies? Where our responsibility to the people is?

Dr. STEWART. I answered your first question. Your first question was in tobacco carcinogenic and I said tobacco is carcinogenic because you can take tobacco tar and paint it on the skin of mice and you can get cancer. Now I said further that I exposed mice to the inhalation of tobacco smoke and got less lung tumors in my experimental animals than I did in my controlled animals.

Well, if cigarette smoke is to be tested carefully it should be tested in a great many species. I did some tests in mice and some other people have done some tests, but not many. There has really been no real serious effort to attempt to produce lung cancer by exposing animals to cigarette smoke. It could be that, as Dr. Darby said, you may find a species in which that species is suspectible to the carcinogenic effect of cigarette smoke on the lung and it could be that

human beings are susceptible. I don't know that answer, whether cigarette smoking is carcinogenic for human beings.

Mr. KEITH. Mr. Chairman?

Mr. WILLIAMS. Mr. Keith.

Mr. KEITH. You said that you found tar in the lungs of these mice that had been inhaling smoke.

Dr. STEWART. That is correct.

Mr. KEITH. And tar on the lung tissue more exposed than skin, which is conditioned to exterior exposure, didn't cause cancer of the inside of the body, where it did cause it on the outside of the body?

Dr. STEWART. That is correct.

Mr. KEITH. It seems very inconsistent.

Dr. STEWART. Well, mice are sometimes inconsistent. This is biological experimentation, you see, and we are products of biology, the human being.

Mr. KEITH. You made reference to the impact of television on the human being as a factor to be considered in weighing your experiments. What did you mean by that?

Dr. STEWART. I didn't say that. You didn't express it the way I expressed it. No, I said several things can happen at the same time in a country, as, for example, in the United States in the last several years or in ancient Rome and ancient Greece, and associated with those very same happenings may be other happenings. For example, there has been an increase in lung cancer, according to my friend, Dr. Levin. Now during the time there has been an increase in lung cancer, there has been an increase in the sale of radios, an increase in the sale of television; we have had a small depression, the price of whiskey has increased. Now how do all these things affect the increased incidence of lung cancer? That is all I meant to say, you see.

Mr. SCHENCK. Mr. Chairman?

Mr. WILLIAMS. Mr. Schenck.

Mr. SCHENCK. May I point out, Dr. Stewart, that there has also been a tremendous increase in automobile traffic, a lot of increase in exhaust gases into the air. Isn't that maybe a part of your progress? Doesn't that become a part of your analysis?

Dr. STEWART. Of course the exhaust from the automobiles are carcinogenic.

Mr. AVERY. Dr. Stewart, I don't like to belabor this point, but I am a little confused on this matter. In your experimentations, just what were you able to establish with your experimentation on cranberries that is carcinogenic which you did not establish as to the carcinogenic effect of tobacco tar?

Dr. STEWART. I never experimented with cranberries.

Mr. AVERY. Apparently somebody did in your shop, did they not?

Dr. STEWART. Not that I have heard.

Dr. MIDER. No, sir, Mr. Avery, not at the National Cancer Institute. We have used 3-amino 1:2:4-triazole to interfere with the oxidative enzymes in the liver, but we have not tested its carcinogenic potency in experimental animals. There is one experiment underway at the present time.

Mr. GLENN. Dr. Stewart, did I understand you to say that DDT has some effect in the growth of cancer?

Dr. STEWART. DDT has been shown to be a carcinogen for animals.

Mr. GLENN. Does that mean then the use of DDT in these sprays throughout agriculture and the many other uses it may have some effect on animals?

Dr. STEWART. It may have some effect on animals.

Mr. DINGELL. And on humans, too.

Dr. STEWART. And on humans.

Mr. GLENN. Has any safe limit been arrived at as to the use of DDT?

Dr. STEWART. I don't know whether a safe tolerance for DDT in animals has been shown or not.

Dr. DARBY. Dr. Tannenbaum, would you like to speak to that?

Dr. TANNENBAUM. From the discussion that has been taking place, one might get the impression that the whole field of carcinogenesis is in a state of confusion. This is not true. Some of the misunderstanding arises from not taking into account the varied responses due to the differences in species, tissues affected, potency of agents studied, time of exposure, and so forth.

If the agent that induces cancer is potent, effects may be elicited in more than one species and in a number of tissues. On the other hand, if the agent is potent but utilized in extremely small dosage, or if it happens to be very mild or weak, it is more difficult to demonstrate a cancer-producing effect.

This morning, certain questions and comparisons failed to consider these and other facts. For example, the same agent (cigarette smoke) may produce a cancer of the lung in man after acting for 20 to 30 years, but may not in the mouse exposed for only 6 months to 1 year. The relative size of the nasal passages, and the rate and depth of respiration, may make a difference in the amount of agent that reaches the bronchial epithelium. Tissue susceptibility may differ between species. These and other factors and conditions must be considered before accepting a view that different events have occurred following identical exposures.

Mr. WILLIAMS. Let me ask Dr. Darby this question before we go any further. Do I understand that each of these gentlemen has a brief statement to make?

Dr. DARBY. Yes.

Mr. WILLIAMS. The time is passing rather rapidly. I am certain that the members of the committee could keep you here all day on the points raised in Dr. Stewart's statement, but I am inclined to think that maybe we better move along as fast as we can. I believe you were seeking recognition, Dr. Levin.

Dr. LEVIN. Mr. Chairman, I simply wanted to comment on an implication which Dr. Stewart has made which members of the committee apparently took up, that the evidence regarding the relationship between cigarette smoking and lung cancer rested merely on the association of time between these two characteristics. This is not true at all. The evidence rests on the fact that people who smoke today or at any given time when they have been studied show a greater incidence of lung cancer than people who do not smoke. This is not merely a temporal association, but an association in people who do or do not.

Dr. DARBY. I think these points will be elaborated on in the subsequent statements because of the various interests of the panelists. I

think we might follow your suggestion, sir, and go on with the next statement.

Mr. WILLIAMS. I think it would be advisable to move along as fast as we can.

Dr. O'DONNELL. Members of the committee, I am Walter E. O'Donnell, assistant, Division of Preventive Medicine, Sloan-Kettering Institute, assistant professor of preventive medicine, Sloan-Kettering Division, Cornell University Medical College, and assistant director, Strang Cancer Prevention Clinic, Memorial Center, New York, N.Y. As I understand the role of this panel, it is primarily to provide background to the members of the committee in order that they may reach the proper decisions. However, I also understand that there are two principal questions which are involved here, and I think it would be unrealistic and probably not very helpful if we were to concern ourselves only with principles, rather than specifics, which obviously you men are concerned with.

The two questions, as I understand them, are actually one question. First of all, should the so-called Delaney amendment be retained, modified, or eliminated, and, secondly, is it possible to set safe tolerances for food or color additives known to induce cancer in man or animal.

Now the first question having to do with retention, modification of elimination of the so-called Delaney amendment seems to me is primarily a concern of the legislators. It is not really up to us as people concerned with the scientific aspects of the matter to advise you specifically. However, I think we would not be fulfilling our responsibility—at least I would not—were I not to make my feelings known on the matter. In my opinion, I believe that the Secretary of Health, Education, and Welfare should not only have the authority but the responsibility to evaluate the carcinogenicity of and possibly ban the use of certain color additives when in his judgment and that of his advisers a significant cancer threat is posed.

So that if this clause under discussion charges the Secretary with the responsibility he does not now have or grants him power he does not now possess, then in my opinion it should be retained. If not—if, as I suspect, he already has this responsibility and power and is exercising them, then the clause would seem to be superfluous and unduly inflexible.

The Secretary should, of course, have full authority to take any appropriate course of action, but it would appear unwise, in my judgment, to attempt to spell this out in advance too rigidly or to single out cancer for special consideration. However, this is primarily a matter of interpretation of the clause as it is worded.

Now the second part, having to do with the establishment of safe tolerance levels, is more of a scientific question. I think, first of all, there is need to define what is meant by a "safe tolerance level." Without going into that specifically here—and this will undoubtedly come out in the later discussion—I think one must say that if you mean that by reducing the dosage of a laboratory carcinogen to a certain minimum level, one could be absolutely 100 percent sure that no human would ever develop cancer no matter how long the exposure, the answer must be "No." But one should hasten to flank this statement with one which emphasizes that by the same token it is virtually impossible to declare any substance absolutely safe. It is inherent in the very

nature of such biological testing schemes that there will be false positives and false negatives. That is to say, certain substances will be declared free of cancer hazard which in fact do not appear to be free of cancer hazards and others will be declared carcinogenic which do not appear to be.

In general, I would oppose any attempt to set tolerance levels for the more potent carcinogens and Dr. Tannenbaum's point is well taken that it is important to distinguish between strong and weak carcinogens.

I would also oppose setting tolerance levels for weak carcinogens, not because I do not think it could be done with considerable accuracy and safety much of the time, but in the vast majority of cases it seems unnecessary to assume even the small risk of miscalculation involved. I feel sure in most instances, as Dr. Stewart has implied, a substitute additive, noncarcinogenic by all laboratory tests, could be found which would do the job just as well. I would rather have the decision to set tolerance levels one of judgment, not of legislation.

However, although I am opposed to tolerance levels in the ordinary scheme of things, I do believe the Secretary should be given the opportunity to exercise flexibility discretion and judgment in certain rare instances. I certainly can conceive of situations in the future in which a compound of very unique and important capacities, one for which there is no substitute and which when used in miniscule amounts plays an important role in our economic and industrial life, might suddenly and inexplicably be found to have weak carcinogenic properties. As I understand it, under the proposed legislation such a substance would have to be banned without any consideration of its known benefits as opposed to its hazards. In such a situation I believe that the mature scientific judgment and discretion is called for. If, then, the Secretary's decision were to ban the substance, I would respect his judgment.

Thank you.

The CHAIRMAN. Thank you very much, Doctor.

If you will excuse me just a minute, the Chair would like to go off the record.

(Discussion off the record.)

Mr. WILLIAMS. Proceed, Doctor.

Dr. DARBY. Thank you, sir. Are there comments or questions on Dr. O'Donnell's statement?

Mr. DINGELL. Mr. Chairman, could I be recognized?

Mr. WILLIAMS. Mr. Dingell.

Mr. DINGELL. Doctor, you made the statement that it is conceivable that some food additives would at some future time have an enormous impact on the economy which would justify the fixing of tolerances for a carcinogen. Is that a correct summary of your statement?

Dr. O'DONNELL. Well, I think—yes, but——

Mr. DINGELL. Do you know of any such situation that prevails?

Dr. O'DONNELL. No, I do not at the present. However, I must immediately disavow any pretensions to being an expert on food additives as such and the various ones which might involve a situation such as I speculated upon.

Mr. DINGELL. Now under the circumstances, you say you know of no situation where this would be justified as of this particular time. Now let's go on. You say that this should be a matter of judgment

in the Secretary. Is that correct? Your statement that this would be a matter of judgment does not raise an inference that the Secretary has not been behaving promptly in his actions in banning of certain carcinogenic substances from the foods? I don't want to embarrass you and I don't want to entrap you; I want to know, Doctor. This is not to embarrass you, but you don't want to raise any inference that he has been acting on improper scientific evidence, do you?

Dr. O'DONNELL. No, I certainly do not. In a sense it seems to me that the Secretary is empowered to set tolerance levels at the present time.

Mr. DINGELL. For things other than carcinogens?

Dr. O'DONNELL. Well, because of the nature of the wording of the clause, as I understand it. In other words, it would seem to me he is empowered to decide when tests are appropriate for the testing of a substance and when they are not appropriate, and if he is confronted with evidence which would appear to the average person, let's say, to demonstrate that a substance is carcinogenic, it is his prerogative to declare this an inappropriate test.

Mr. DINGELL. So, in effect, the Secretary does not fix tolerance levels. In effect, what the Secretary does is exercise an intelligent judgment as to whether or not the tests are appropriate to determine whether this substance actually happens to fall within the bane of the so-called Delaney clause and actually determine whether or not they induce cancer, whether these substances induce cancer in humans or in test animals; isn't that correct?

Dr. O'DONNELL. Yes, this is his role.

Mr. DINGELL. So, in effect, the Delaney amendment as of this moment, as applied in existing law, does not ban mature scientific judgment in terms of whether or not a substance is carcinogenic or not, does it? I say does not ban mature judgment.

Dr. O'DONNELL. No, it does not. However, it specifies something that we assume is being exercised now and would appear to give him power which he already has, as far as I am able to determine.

Mr. DINGELL. I see. Thank you very much, Mr. Chairman.

The CHAIRMAN. Any further questions? Thank you very much. Proceed.

Dr. DARBY. If there are no other questions, we shall proceed to the next panelist, Dr. Mider, National Cancer Institute.

Dr. MIDER. Mr. Chairman, gentlemen of the committee, in the interest of saving time, I will be glad to associate my views with those of my distinguished colleague, Dr. Harold Stewart, insofar as the general tenor of his prepared statement is concerned.

I, too, believe that the language in House bill, H.R. 7624, often referred to as the Delaney clause, is necessary for the optimal protection of the public interest in the light of our present knowledge. The current controversy over the Delaney clause is intensified perhaps by rapid advances in our technology. We are now able to measure some chemicals in extremely small amounts that only a short time ago could not even be detected in such low concentrations, or, if detectable, could not be quantified. One can understand the reluctance to accept an hypothesis that millimicrogram quantities of a compound may produce cancer when the only existing data relate to the cancer-producing activity of doses measured in milligrams, 1 million times larger. On the other hand, some vitamins essential to our well-being

are active in micromilligram quantities and probably some of the hormones produced by certain endocrine glands are equally potent.

The Delaney clause has been criticized as rigid and allowing for no scientific judgment of the results of research. I submit that the clause requires a finding that a chemical does in fact produce cancer when ingested by man or animal and also requires that tests be appropriate for evaluation of the safety of food additives. These requirements can only be met through scientific judgment relating to adequacy and validity of experimental design and the reproducibility and reasonable interpretation of the results. The Secretary of Health, Education, and Welfare has also emphasized this point.

Finally, I am deeply concerned about our ability to control the consumption of any food additive. A poisonous drug can be used extremely well by the medical profession, and much good accrues in the public interest. The same compound used indiscriminately may kill. A drug or chemical introduced in the food supply will be eaten in various degrees of susceptibility to its pharmacological effects. The ability to produce cancer is but one of many noxious effects. I believe the current uncertainties concerning quantitative factors in the carcinogenic process as initiated by chemicals require the safeguards included in the Delaney clause of House bill H.R. 7624.

Mr. WILLIAMS. Thank you for your statement.

Mr. YOUNGER. Dr. Mider, will you read that statement back where you mentioned the responsibility of the Delaney amendment?

Dr. MIDER. The first statement I made about it, Mr. Younger?

Mr. YOUNGER. No. As I understood it, you said that it is necessary to prove that this particular food is cancer producing. Now you have something in there about it, which under the Delaney amendment it is required that you must make tests.

Dr. MIDER. I submit that the clause requires a finding that a chemical does, in fact, produce cancer when ingested by man or animal and also requires that tests be appropriate for evaluation of the safety of food additives.

Mr. YOUNGER. Well, that isn't the understanding which I personally gathered from Mr. Flemming. If they discovered a carcinogenic substance of any quantity, without any further test as to its application to mice or anything else, then it is thrown out.

Dr. MIDER. That is correct, sir, providing the evidence is adequate to support such a judgment that it is in fact carcinogenic. It is then thrown out.

Mr. YOUNGER. In any quantity?

Dr. MIDER. Correct.

Mr. YOUNGER. And you do not have to have tests to prove whether or not this particular chemical produces cancer?

Dr. MIDER. That is correct.

Mr. DINGELL. Just a minute. That is not a correct answer to that question. Once the tests establish that a substance is a carcinogen, then it is banned, but let's say the establishment of a tumor in a single mouse or rat or in a single strain of mice would not be sufficient on which to base a proper judgment that the substance is a carcinogen.

Dr. MIDER. Other things being equal, that would be true. I can think of circumstances, however, in which the appearance of one tumor in a small group of mice might require additional experimentation before one could give a good judgment.

Mr. DINGELL. This is precisely the point that I was talking over with Dr. Stewart, or rather, with Dr. O'Donnell to the effect that this is a matter of mature judgment.

Dr. MIDER. Yes, sir.

Mr. DINGELL. It is tested scientifically as to whether or not the substance does create a cancer in a test animal or human being and then it is banned.

Dr. ZAVON. Mr. Chairman.

Mr. FLYNT. Dr. Zavon.

Dr. ZAVON. Would it be possible for the chairman of the committee to give the members of the panel, one might say, an official interpretation of this Delaney clause, because, as I read it, the first part of the clause says flatly—

shall be deemed unsafe and shall not be listed for any use which will or may result in ingestion of all or part of such additive, if the additive is found in amounts and under conditions reasonably related to the intended use to induce cancer when ingested by man or animal, or if it is found—

That is an "or" clause, and my previous experience would indicate that "or" legally has a great deal of significance and therefore this is a flat prohibition without any judgment involved. Is this correct, or is there another interpretation?

Mr. FLYNT. Dr. Zavon, let me say that the present occupant of the Chair could take the easiest way out and say the permanent chairman has just returned. However, I think that would be manifestly unfair to the chairman. Let me say this, as a practice the present occupant of the chair or any person who might be occupying the chair at the given time, would attempt to give a definitive statement on any phase of proposed legislation or inactive legislation because this particular section of which you have asked a definitive interpretation, is capable of as many different interpretations as there are members of a committee or a panel.

Mr. WILLIAMS. And as someone said, our Supreme Court.

Mr. FLYNT. And I do not, of course, Dr. Zavon, mean to give you a short answer on that, but it is impossible to give a definitive answer.

Dr. ZAVON. The reason I ask the question is that apparently the Secretary has interpreted it to mean that judgment can be used, but apparently a succeeding Secretary, someone else, could equally well take the same words and say, "No, I cannot use my judgment, this is a flat prohibition irrespective of the validity of the test involved." This is what disturbs me just a little bit in reading this wording.

Mr. FLYNT. What you have stated is substantially true, that under the phraseology of the language that you just read the Secretary by his exercise of his own independent judgment which would be binding until overruled by a proper court ruling or by his successor in office.

Mr. ROGERS of Florida. Mr. Chairman, I just wanted to ask Dr. Mider a question. As I understood it, you feel that there is an element of judgment as far as the Delaney amendment is concerned in determining what is a carcinogenic substance. That is where the judgment comes in?

Dr. MIDER. Yes, Mr. Rogers.

Mr. ROGERS of Florida. But once that has been established, then there is no judgment to determine what level might be safe, is that true?

Dr. MIDER. That is correct.

Mr. ROGERS of Florida. Now, is it true that, for instance, feeding or injecting a tannic acid, which is in, say, tea, has been shown by scientific studies to produce cancer. Are you familiar with any such studies?

Dr. MIDER. I am superficially familiar with it, Mr. Rogers. I believe that tannic acid does produce damage to the liver and tumors do arise in the liver.

Mr. ROGERS of Florida. Would that constitute a carcinogen?

Dr. MIDER. I am not familiar enough with the details of the experiment to pass judgment at this time.

Mr. ROGERS of Florida. I wonder if any of the members of the panel are.

Dr. MILLER. Korpassy, in Hungary, has definitely shown that when large amounts of tannic acid are injected subcutaneously in rats liver cancer will develop. There is no evidence yet that feeding of tannic acids, which are present in many of our foods, will induce cancer in experimental animals.

Mr. ROGERS of Florida. What about the feeding of eggs?

Dr. MILLER. That is a very important point. There is an investigator who has fed boiled egg yolk repeatedly to mice for their lifespan and claims to have an increased incidence of cancer in these mice.

Now, many of us in the field of chemical carcinogenesis and nutrition realize that these experiments are thoroughly inadequate to support the conclusions that this investigator has made. He has used small groups of animals. He has not controlled them from the standpoint of caloric intake and so forth. So a statement to the effect that egg yolk or eggs are carcinogenic is at present indefensible.

Mr. ROGERS of Florida. Does not stand up under scientific judgment?

Dr. MILLER. It certainly doesn't.

Mr. ROGERS of Florida. How about salt in the diet?

Dr. MILLER. The only hint that I can think of that this has been associated with carcinogenesis are experiments in Japan on the subcutaneous injection of hypertonic—that is strong solutions of salt—for 1 year to rats. These rats then developed about a 20-percent incidence of sarcomas; i.e., tumors derived from subcutaneous tissue. An isotonic level of salt did not produce any tumors when so injected. This is at the level found in our blood. So I think the route is highly abnormal, and there is no reason to believe that salt is carcinogenic by ingestion.

Mr. ROGERS of Florida. Is it toxic?

Dr. MILLER. Any substance can be toxic if supplied to an animal in sufficiently large amount.

Mr. ROGERS of Florida. Is salt toxic to an animal if it is 6 percent of its diet?

Dr. MILLER. It certainly is. If you feed enough salt you can kill an animal off easily.

Dr. DARBY. As a matter of fact, Mr. Rogers, you can increase blood pressure very significantly in rats and increase the number of animals that die of the consequences of hypertension by increasing sufficiently the amount of salt in the diet over a long period of time. In fact, excessive amounts of any nutrient can be harmful. Any essential nutrient if given in sufficiently large quantities can be judged to have

toxic effects. If we give any one of the vitamins in sufficient quantities, we can get toxic effects, although if we do not have them we die for a lack of them.

Mr. ROGERS of Florida. So you have used scientific judgment to determine the level of intake?

Dr. DARBY. Exactly.

Mr. ROGERS of Florida. Now, what I wanted to know about these tests that are made by Dr. Mider, for instance—are all of the tests done by ingestion or are the tests made by injection as well?

Dr. MIDER. Mr. Rogers, in most cancer research laboratorise we have done most of our testing by injection or by painting. There has been comparatively little testing for carcinogenic action by oral administration, especially of those things which might conceivably be used as food additives. We have fed compounds which have no probability of ever entering the human environment outside of the laboratory, but we are woefully ignorant of dose response relationships or of carcinogenic effects obtained from feeding of some of the things that are of interest in relation to food additives.

Mr. ROGERS of Florida. I wonder if the tests then are consistent. I am asking for my own knowledge. Are the tests inconsistent? Can results of our intake by ingestion be proved by tests by injection? You see what I mean? What I am trying to drive at, there are tests of ingestion and injection. Will they bring about the same result?

Dr. MIDER. Not necessarily, Mr. Rogers. For example, one can produce an increase in the frequency of breast tumors in mice by the injection or ingestion of the estrogen diethylstilbesterol. One can do it also by the injection of naturally occurring estrogens, but we do not anticipate we will be able to feed these estrogens and get the same effect because generally speaking they are destroyed by the gastrointestinal juices.

Mr. ROGERS of Florida. In determining what materials are carcinogenic do you make your determinations from your tests by injections to determine what the human should ingest?

Dr. MIDER. Mr. Rogers, most of the things that we have been interested in, we were interested only because they produced cancers. For that purpose we can define a carcinogen as any material which will produce a cancer by any route of administration. This is acceptable in some circles. Whether or not this broad definition is appropriate to the interpretation of the Delaney clause I think is open to very considerable question.

Mr. ROGERS of Florida. I wondered what basis there should be for making tests to come to a scientific judgment, which is the only judgment, I understand, that would be permitted under the Delaney amendment, the judgment of determining what is carcinogenic. What is the test that should be used?

Dr. MIDER. I would prefer, Mr. Rogers, that anything to come under the Delaney clause should have been tested by feeding. I would find it most difficult to say that since sodium chloride has been found to cause cancer by injection subcutaneously in large quantity that this has any real pertinence to the use of sodium chloride in our diet, especially when body fluids contain a measurable concentration of sodium chloride without which we couldn't live.

Mr. ROGERS of Florida. Is it possible under the Delaney amendment to show that by injection salt could become a carcinogenic material

or could be—I think the tests show that perhaps under some circumstances it could be. Is it possible under the Delaney amendment that some future Secretary would have the authority then to say that this would be banned from the diet?

Dr. MIDER. Mr. Rogers, I can't answer that, sir. I am sorry, because I believe most of the judgments are made by the extremely competent scientists of the Food and Drug Administration, and the scientific judgments are then taken to the Secretary for affirmation.

Mr. ROGERS of Florida. I am not saying that I am questioning anyone's abilities, and I am not. I am saying under the interpretation of the Delaney amendment since you say that the only judgment is whether material is or is not carcinogenic—a test by injection could bar materials to be ingested.

Dr. MIDER. Within the meaning of this act.

Mr. ROGERS of Florida. Now, if you make tests by injection and use an injection testing method to determine whether material is cancer forming, then it is possible, is it not, under this Delaney amendment for some future Secretary, if they tell him, well, now, we have made tests by injection and it has caused cancer, would it not then be possible for some future Secretary under the Delaney amendment to say there will be no salt sold for humans?

Dr. MIDER. Theoretically, sir, it is possible.

Mr. ROGERS of Florida. Thank you.

Dr. DARBY. Mr. Rogers, I believe some of the other panelists will give some attention to this question of the method of tests and the interpretation and the nicety of judgment as to the appropriateness of a given test in relation to the use or possible use of an additive. Now, I think even possibly Dr. Kensler may have something to say on it and perhaps we may let him at the same time make his statement.

Mr. FLYNT. I would like to ask Dr. Mider one question: Is it substantially true that nearly every element of food known at the present time if either injected or ingested in large quantities is capable of producing cancer first or toxicity secondly?

Dr. MIDER. No, Mr. Flynt, I don't believe it is possible to produce cancer with most foodstuffs. It is, however, possible to produce toxicity with most of them, some type of toxicity.

Mr. AVERY. Mr. Chairman, I would like to ask a question before we get into the next statement. I think I will direct it to Dr. Stewart. We have used the pronoun "they." They conduct these tests to determine whether or not a certain chemical is carcinogenic or not. Who is they? Who finally makes that determination?

Dr. STEWART. I don't do it, but I think this is done by Food and Drug Administration.

Mr. AVERY. Does anybody here know?

Dr. LARRICK. In general, if a new article is to be introduced into the diet it is incumbent upon the manufacturer to bring to the Food and Drug Administration the evidence showing that it is not harmful to them and also evidence dealing with this carcinogenicity, and then our scientists are empowered to use just these judgmental decisions that Dr. Mider spoke of. Ordinarily the tests are made in the universities or in the commercial laboratories and are brought to us by the firms that want to use the food additives.

Mr. AVERY. Thank you. I will read your statement again after a while.

Mr. KEITH. Mr. Chairman, I would like to ask a question of Dr. Stewart.

Mr. FLYNT. Mr. Keith.

Mr. KEITH. In your opinion, Dr. Stewart, would fluoride in 1 part per 1,000 cause cancer in test animals?

Dr. STEWART. I don't know.

Mr. KEITH. Is it possible that it could?

Dr. STEWART. I really don't know the answer to that.

Mr. KEITH. Thank you.

Dr. DARBY. Dr. Kensler.

Dr. KENSLER. Charles Kensler, professor of pharmacology and experimental therapeutics, Boston University School of Medicine.

I think the committee has available to it—or I know it has the document which was prepared by a subcommittee of the Food Protection Committee of the National Academy of Sciences. This is the document entitled "Problems in the Evaluation of Carcinogenic Hazards From Use of Food Additives." There are seven members of this committee, four of whom are present today. I think in this report you will find in moderately detailed fashions most of our collective scientific knowledge and evaluations of this problem, although we as individuals may differ with particular statements of opinion expressed in it. In contrast to what Dr. Stewart said about it as being too conservative, I think actually he meant it is not conservative enough. It is in reality too liberal. I think in terms of Dr. Stewart's statement concerning possible synergistic effects of carcinogens that he is using a different definition of synergism than I would use. Synergism means to me that you get more from the combination of two things than simple addition. I am not aware of experiements which clearly prove synergistic effects. I am aware of experiments which show that one carcinogen can prevent the action of another in the same animal.

I would like to read three sentences from this report. These were some generalizations which the committee found it possible to agree on. The first is one——

Mr. KEITH. What pages are you reading from?

Dr. KENSLER. I am reading from page 19:

1. If a substance is shown by adequate test to be carcinogenic for one mammalian species, it is probable that it is carcinogenic for many, but not necessarily for all others, although quantitative differences between species may be marked.

2. Carcinogens are likely to be active when administered by any of several but not necessarily all routes, although noteworthy quantitative differences associated with route of administration are evident.

3. There are nontumorgenic levels of exposure to carcinogens for given experimental conditions, but threshold levels may be affected by a number of factors associated with the carcinogenic process.

I think this last point is really the crux of the issue; namely, while I think most would agree that carcinogens, certainly weak ones, can be administered to animals without any increase in the resulting spontaneous level of cancers to which the population is exposed. It is difficult to extrapolate from species to species, from route to route, to arrive at quantitative evaluations of any safety level for man. However, I do believe as a pharmacologist that carcinogens represent not a unique category of materials but represent compounds at one end of a spectrum. Carcinogens have a slower onset of action than many other drugs. They have a longer duration of action, which may or

may not prove to be irreversible. There is evidence suggesting that it is not truly irreversible, but at this point it is controversial.

The area which I would like to mention, an example in terms of the amounts required to produce cancer, which I think is an important consideration, which is automatically excluded by the Delaney amendment, which, in my opinion, prevents an expression of scientific judgment on this matter could be illustrated by a compound which when fed to rats at a 25-percent level in the diet products an incidence of bladder cancer, which is statistically significant in animals fed at that level. This occurrence is associated with the production of bladder stones. Insofar as we know this compound does not produce bladder cancer unless it first produces stones. There is obviously, as has been shown in these experiments, levels at a 10-percent-of-lifetime intake of an animal in the diet where neither stones nor cancer were produced.

Now, I think that it is problems such as this that scientific judgment should be permitted to be exercised under the law, and that it would seem to me that the Delaney amendment might be modified from its present all-inclusive ban to a statement which would involve the scientific judgment of the problem as a whole, including the experimental evidence, and that this might be handled by having the Food and Drug Administration make its decision as to whether a compound would be permitted for use or not than if the users or the potential users would like to challenge the—we will assume they will just challenge adverse decisions—that a panel of experts, both Government, such as Dr. Stewart and Dr. Mider, and outside competent individuals, be appointed to express an opinion as to the extent of the hazard. The information on which the decision was based should then be made public at the same time that the decision is made public so that other scientists and interested people would have knowledge of the basis on which the decision was made.

Thank you.

Mr. FLYNT. Dr. Kensler, I was impressed with the last statement you made about the necessity for some exercise of judgment. Don't you think that that discretion is authorized by the power given in the language of the amendment for the Secretary to determine which tests are appropriate? I will read this:

> * * * or if it is found, after tests which are appropriate for the evaluation of the safety of additives or use in food, to induce cancer in man or animal.

The example that you just gave about giving a substance in doses of 25 percent and then comparing it with an amount equal to less than 10 percent of the lifetime intake, I think, was your expression; wouldn't that very fact give to the Secretary at least a latitude of discretion that he could exercise?

Dr. KENSLER. Not in my judgment, sir, as I read this law. It lists material fed at the 25-percent level produced these effects and the amount at the 10-percent level did not. According to the law, the first part here, before you get to the "or," "if the additive is found to induce cancer when ingested by man or animal," it seems to me this clause is overriding, but then I don't know the answer to these legal problems.

Mr. FLYNT. You have brought forth the point right there that I wanted to go in the record here.

Mr. KEITH. This is what caused all the trouble in the cranberry incident, in my opinion.

And the Secretary said before the committee that he did not want to have responsibility to establish a threshold, and if he had that responsibility or if he had resorted to a panel as I requested the President to do at the time this thing came up, in my opinion, we would not have had the extensive difficulties that we did.

Mr. FLYNT. Thank you, Dr. Kensler, for including your statement for the record.

Dr. DARBY. Are there any other comments?

Dr. STEWART. I want to defend myself against the attack made upon me by my good friend, Dr. Kensler. He questioned my use of the word, "synergistic effects," and I would like to call his attention, and I will be glad to insert this in the record, to the experiments done by Dr. Steiner and Dr. Falk at Chicago and published in Cancer Research in the January 1951 issue. These two scientists took two so-called weak carcinogens, chrysene and 1:2 benzenthracene. They gave each of these two carcinogens in a certain dose and they got tumors that appeared at a certain time, and they got a certain number of tumors in their experiment. Then they combined these carcinogens. They gave half the dose of each carcinogen combined, so that according to Dr. Kensler, they shouldn't have gotten any more tumors than they did with the most powerful of these two weak carcinogens. Look what they got. The tumors appeared somewhat earlier and they got many more than could be accounted for by the combined carcinogenic effect of these two carcinogens.

Now, I read you what Dr. Steiner and Dr. Falk said about this:

1. 1:2 benzanthracene and chrysene were carcinogenic, inducing sarcoma on subcutaneous injection. The former was stronger than the latter, having both a shorter induction time and a higher tumor yield. The significance of these results with regard to the relation of chemical-physical characteristics of hydrocarbons to their carcinogenicity is discussed.

2. 1:2 benzanthracene and chrysene injected together showed definite summation of carcinogenic effects if not actually a synergistic action. The tumor yield was greater than the sum of their individual tumor yields, despite the halving of the dose of each compound injected. This observation is significant, because it cannot be explained by the existing theories of inhibition or summation effects of carcinogenic compounds.

3. The carcinogenic effects of 1:2-benzanthracene and 1:2:5:6-dibenzanthracene injected together were not those of summation but apparently of inhibition.

4. The carcinogenic effects of 1:2:5:6-dibenzanthracene and 20-methylcholanthrene injected together were additive, although imperfectly so.

I would say with respect to this other carcinogen that Dr. Kensler mentioned, which produces bladder tumors and which he would like to see introduced into the diet of the people of the United States, it is such combinations of so-called weak carcinogens of this type plus other weak carcinogens that may produced bladder cancers, that makes the problem so difficult because it is impossible to quantitate for the individual citizen how much of these various combinations of carcinogens he may get, and he is up against the problem which acts biologically of the synergistic action of one carcinogen upon another.

Dr. KENSLER. If I may clarify my position and answer the attack of Dr. Stewart, I would like to point out that it is impossible to arrive at a decision as to whether you have a synergistic effect or not unless you have established the dose response curve to both of these materials alone and together.

Dr. STEWART. Here they are. Read the book.

(The material is as follows:)

CARCINOGENICITY AND COMBINATION EFFECTS OF HYDROCARBONS

Compound tested	Amt. of chemical	No. of mice	Effective total mice*	Effective total mice†	No. of induced sarcomas	Tumor yield‡ (per cent)	Tumor yield§ (per cent)	Minimum induction time (days)	Av. induction time (days)
Chrysene	5.0 mg.	50	39	24	4	10.3	16.6	349	401
1:2-Benzanthracene	5.0 mg.	50	46	44	8	17.4	18.2	161	285
1:2:5:6-Dibenzanthracene	0.02 mg.	50	48	48	28	58.3	58.3	135	329
20-Methylcholanthrene	0.02 mg.	50	45	43	25	55.5	58.1	153	246
Chrysene+1:2-benzanthracene	2.5 mg. of each	50	41	34	15	36.6	44.1	230	346
1:2-Benzanthracene+1:2:5:6-dibenzanthracene	5.0 mg. plus 0.02 mg.	50	39	30	11	28.2	36.6	211	324
1:2:5:6-Dibenzanthracene+20-methylcholanthrene	0.02 mg. of each	50	42	42	33	78.5	78.5	120	180
Tricaprylin controls	0.2 cc. to 2.0 cc.	304	280	233	3	1.1	1.3	268	343
Uninjected controls	None	130	114		0	0.0	0.0		

* Number of survivors at 4 months, when the first tumor appeared among all compounds.

† Number of mice surviving when the first tumor occurred with that particular compound.

‡ Based on the 4-month effective total.

§ Based on the effective total surviving when the first tumor occurred with that compound.

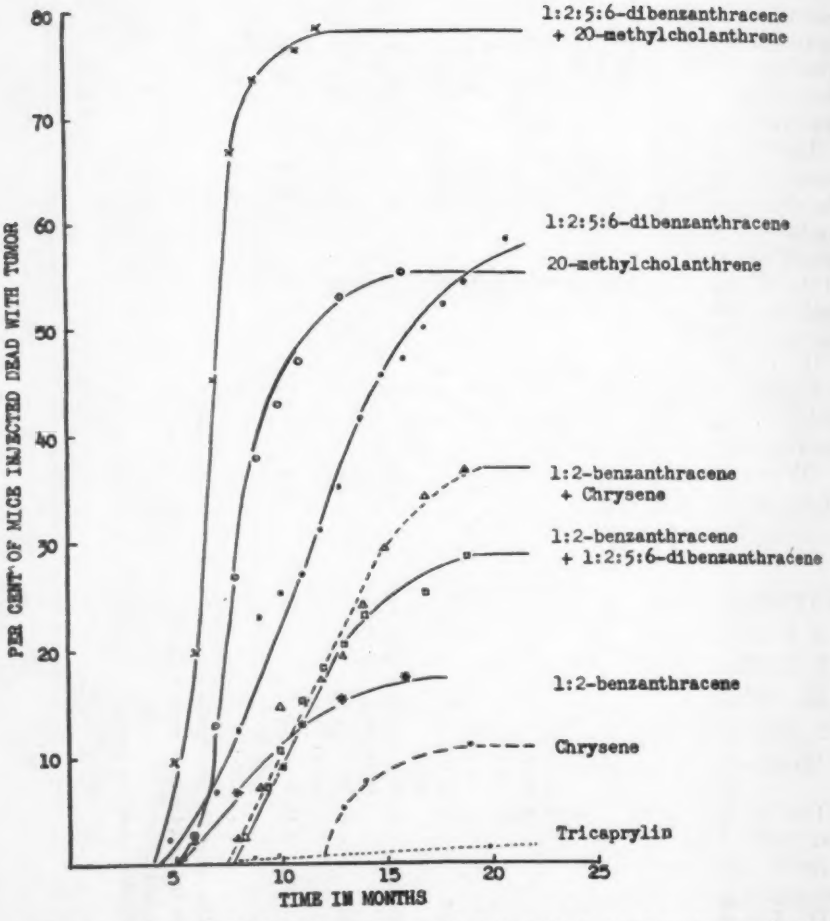

FIG. 1.—Cumulative mortality from induced tumors. Shows cumulative percentage of the mice injected with each compound dying of tumor in each month. For calculating these figures the effective total mice in each experiment was the number surviving at 4 months.

Dr. KENSLER. Is that dose or time?

Dr. STEWART. Here are the raw data.

Dr. KENSLER. This is not a dose response curve. This is a time course in the occurrence of incidence.

Mr. KEITH. Excuse me, Mr. Chairman.

Dr. KENSLER. I would like to clarify one other matter. I did not recommend or mean to imply that I recommended that this emulsifier be included in the diet. What I recommend is that a panel consider whether or not they would recommend it in any amount, and that they have the right to do this and not be automatically banned by law from even considering this problem.

The CHAIRMAN. Gentlemen, this discussion has reached a most interesting stage. I am wondering, in view of the time and no doubt the demands made on a good many members of the committee, since we have a great many of our constituents here for various reasons, it would not be advisable to recess until 2 o'clock. I think the business of the House will have been accomplished by that time. We can come back and resume, as I understand several members of the panel have not yet presented their statements; is that right, Dr. Darby?

Dr. DARBY. Right.

The CHAIRMAN. That would indicate that we are getting along, and if you gentlemen would accommodate us by returning at 2 o'clock, we will resume.

(Whereupon, at 12:10 p.m., the committee recessed to reconvene at 2 p.m., of the same day.)

AFTERNOON SESSION

STATEMENTS OF DR. WILLIAM J. DARBY, CHAIRMAN, DR. HAROLD F. BLUM, DR. PAUL R. CANNON, DR. FLOYD DE EDS, DR. CHARLES J. KENSLER, DR. MORTON L. LEVIN, DR. G. BURROUGHS MIDER, DR. JAMES A. MILLER, DR. WALTER E. O'DONNELL, DR. HAROLD L. STEWART, DR. ALBERT TANNENBAUM, AND DR. M. R. ZAVON—(Resumed)

The CHAIRMAN. The committee will come to order. Dr. Darby, you may proceed. Do you want to take up where we left off, with a lively discussion? If so, that is all right with me. Maybe the committee is enthusiastic.

Dr. DARBY. Thank you, Mr. Harris. I think in order to get back into the spirit of the discussion we might start with the statement from the next panelist. Knowing this panel, seeing its performance this morning, I am sure we will immediately get back to the spirit of the discussion at the time we had the break for lunch.

So I would like to introduce Dr. Paul Cannon.

Dr. CANNON. Mr. Chairman, with reference to my qualifications for service on the panel, let me say that I have the M.D. degree from Rush Medical College and the Ph. D. from the University of Chicago. For the past 40 years I have been a pathologist, the last 20 of which have been as chairman of the department of pathology at the University of Chicago, until my retirement in 1957. At the present time I am the chief editor of the Archives of Pathology of the American Medical Association. I am a member of the Food Protection Committee

and of the Carcinogenesis Committee of the National Research Council, and I am chairman of the Studies Section on Toxicology of the National Institutes of Health.

I might add that I was a member of the group that worked out the problem of the elixir of sulfanilimide tragedy of 1938 in which we established diethyleneglycol as the toxic agent. As you will recall, this episode stimulated the passage of the Food, Drug, and Cosmetic Act of 1938. As to my accompanying statement, since most of the discussion this morning was essentially theoretical, I would like to make a few remarks of a practical nature with reference to the problem of testing. The details of this problem are handled in the brochure that has been mentioned this morning, but I don't know whether all the Members of the Congress or even all the members of this committee are completely aware of the complexities of the testing problem from the standpoints of time and expense involved, numbers of animals required, facilities demanded, and, particularly, the availability of personnel competent to determine the question of carcinogenesis of selected agents. I think Dr. Stewart and Dr. Hueper and I estimated about 3 years ago that at that time there might not be more than 12 persons in the entire country competent to do this job, and that, furthermore, probably of those 12 not more than 6 would be interested in doing it. There is unquestionably a tremendous dearth of toxicologists, and also of experimental pathologists. We estimated at that time that it might cost something in the order of $200,000 to test adequately a single substance.

I mention these facts simply because many are unaware of them. Furthermore, one of the objectives of our Toxicology Study Section is to promote interest in methodology in the field of food additives in order to find ways whereby some of these problems can be solved more rapidly and less expensively.

It is a tremendously complex problem. I notice in the act of 1958 that there was a time interval allowed for certain chemical substances that might be added, a testing period of 1 year which could be extended to 2 years. Now the time period of March 5 has passed and I understand that many of these have had to have another period of extension.

In consequence we now have the so-called white list and the black list. In relation to these time periods let me recall that in our recommendation of the Carcinogenesis Committee, we suggested that a minimum of 4 years may be necessary in the dog for the testing of possible carcinogenicity, and Dr. Stewart has suggested this morning that in some instances it might take 7 or 8 years.

And yet if we are going to legislate on this, we can't avoid the above hard facts unless we can discover more rapid methods.

It is true that in H.R. 7624 there is more leeway with respect to time of its becoming effective; viz, a 2½-year period, with the Secretary of HEW being allowed to give a further extension if necessary. I am sure, however, that there will be situations in which even 3½ years will not be adequate for the proper testing of certain substances for carcinogenicity.

To me the most hopeful thing about this legislation is the fact that more persons are becoming interested in the problem of carcinogenesis and the prevention of cancer rather than in trying to cure cancer after it has developed.

In any case, no matter how hopeful we may be, we must look forward to many years of intensive investigation of the problems of carcinogenesis. I offer these suggestions on the assumption that some may not be completely aware of the extreme technical difficulty of the problem and the great scarcity of manpower in this field.

There is one other item I would like to mention, because I think many people are also unaware of this. We have been studying this problem in the Food Protection Committee of the National Academy of Sciences for at least 5 years.

Dr. Stewart, Dr. Hueper, and I were on the first ad hoc committee that started the study, and that led to the present committee from which this report has come. I would like to emphasize this point: The entire impetus for the study came from the industry members of our group. I say this because I think they are entitled to great credit for asking that a detailed study be made of the entire problem of chemical carcinogenesis. They have cooperated with us in every way in our studies.

Thank you.

The CHAIRMAN. Thank you, Doctor.

Dr. DARBY. Do members of the committee have any questions or points you would like particularly to put to Dr. Cannon?

The CHAIRMAN. Mr. Rogers?

Mr. ROGERS of Florida. Mr. Chairman, on the testing, Dr. Cannon, is there any agreed method or is there disagreement on the methods used for testing for the carcinogens?

Dr. CANNON. I think there are others on this panel who will talk to that. However, it was obvious in this morning's discussion that there are disagreements as to methods of testing, and I suppose there always will be. I think that is a good thing, in the interests of progress.

The important question is: When you legislate, you have to be sure, as I am sure you realize, of the nature of these disagreements. I think every member of this panel would be free to admit how much is not known, and indeed many have already admitted that. In short, we have to develop new methods and continue to try to get better methods.

It is a pretty severe kind of test which may require 7 or 8 years and then even have to be extended to the offspring of animals, as Dr. Stewart brought out this morning in connection with the transmission of some of these materials through the mother's milk. It is just another problem for which we have no answer.

Mr. ROGERS of Florida. Yes, I realize the difficulty, and what I was wondering now, is there some basis of agreement that the scientific community could come to to decide on testing in order to be helpful to the Secretary of Health, Education, and Welfare in coming to a conclusion as to what should be prohibited?

Dr. CANNON. I think there has been a reasonable basis of agreement between our report and the members of the Food and Drug Administration, for instance. As a matter of fact, one member of the Food and Drug Administration was on our committee, and there has been quite good agreement, I should say, on methodology.

I think the thing we are all unhappy about is the fact that the methodology is so complicated.

Dr. DARBY. I think if you should like this might be a point for several members of the panel to comment on your question, because this is a very important question, and as Dr. Cannon has emphasized, it is one which has very real practical considerations in terms of resources required for study, and returns on invested resources after a certain degree of investment.

I believe, if I might predict what the general nature of the discussion may be here, that there would be a large area of agreement up to a certain point, on the kinds of investigations which would be informative. That where the major disagreement will arise is in the extent of study beyond a certain basic program which will prove informative. I don't want to influence the nature of the discussion, but I think that this is what one will see as the discussion evolves. I would like if I might to call on two or three members of the panel to comment on this.

Dr. Miller, would you like to speak to this?

Dr. MILLER. Briefly, yes. Certainly there is very good agreement, I believe, amongst this subcommittee and Food and Drug Administration that testing by ingestion is necessary in every case. That is, when you have substances new to man's experience, that are being proposed for use in foods, they must be tested by this particular route. Now practical considerations limit the type of animal in this case. We have to get these tests done in some reasonable length of time, and we have to have animals that are readily available in large numbers, and this for all practical purposes brings it down to using the rat and the mouse for their lifetime. This is of the order of 2 to 3 years. This is what we on the subcommittee have proposed, that these substances be tested at several levels for the lifetime in rats and in mice.

We also have suggested, because of the fact that large species differences exist amongst various animals and their response to carcinogens, that these substances be tested in one other species, a nonrodent species.

Here again you are limited to practical considerations. The dog is for all practical purposes the only other species that we can turn to at the present time on which we have any real information, on how this species responds to carcinogenic substances. We have proposed that these animals be tested for approximately 4 years. Now I know that Dr. Stewart feels that this is not long enough, but there have to be some practical limitations. If we tested each substance in the detailed way that Dr. Stewart outlined, this morning, we would never get done with testing one substance in the next 20 years.

We have also suggested that these materials be tested by painting on the skin of mice. Now to my knowledge this is not required at present by Food and Drug Administration, but we feel this is a site observation that is always available to the experimenter.

He can pick up early lesions. It is a site on which we have a great deal of information on the mechanism of carcinogenesis, such as it is. We have also suggested a very limited use, at least in some cases, of the subcutaneous route. Now, there is a lot of argument about this, and we have suggested that this test be used in certain cases in a very limited sense, that is a single injection of a fairly large amount of material.

This is to prevent false positives. Now, we have mentioned this morning how salt or sugar solutions in high concentration when repeatedly injected produce tumors in a very sensitive site, the subcutaneous tissue of a rat.

Now what is involved there? What is involved is not only the injection of these materials every day, but every day you have to put a sharp needle in there. You are destroying cells. You have regeneration of cells. You can't tell at the end whether this effect, the tumor that you got, had anything to do with the continued regeneration of tissue or whether it was really due to the material that you injected.

Mr. DINGELL. Doctor, at this point perhaps maybe your statement about injection of salt under the skin might not have so much to do with the salt being there as with the sticking of the needle.

Dr. MILLER. You do it with water and you won't find tumors, but together you do. So it is very difficult to separate these two things. Therefore, our reason for suggesting that a single injection be made was to eliminate as far as we could the repeated trauma and regeneration with repeated injection.

Mr. ROGERS of Florida. Did I understand you to say that when injections were made with water there was no——

Dr. MILLER. Nothing happens then or with iosotonic salt, that is, salt that is present in the same concentration as in our body fluids. So you see the tests that this subcommittee have proposed go beyond the present requirements that the Food and Drug Administration requires to show whether a compound is carcinogenic. Now they are limited by practical considerations obviously. There is a limit to what you can expect a manufacturer to come in with in terms of data, so it is an extremely difficult problem, and one in which further research needs to be done.

I am gratified to see that the Food and Drug Administration is turning more and more to research in this field and I certainly hope that they can continue to get more appropriation for this sort of work. We need more information on this.

Mr. ROGERS of Florida. May I ask one question there? As I understood some of the discussion this morning, they felt that there was a level of application of scientific knowledge as to testing the amount of the item to be tested, and that is where the scientific judgment came into play in the testing, to determine whether something is bad or good for the diet.

But as soon as that had been established, then under the Delaney amendment as I understand it, that item would be barred if it were found to have carcinogenic properties.

Now do you think we are at the point where we can generalize in this area where judgment would be put into effect to the extent that we can get the result that we want now?

Dr. MILLER. I certainly don't think we can generalize in such a way as to take care of the testing of all kinds of substances that may come along. There are some very big surprises, at least they are to me, that have come up in terms of what will produce a tumor in an animal.

I think we have to make it possible that the merits and demerits of a particular substance in question are examined by as competent a board of scientific experts as we can get.

Let them exercise the judgment.

Mr. ROGERS of Florida. Are you in agreement with Dr. Cannon that there are perhaps only 12 people of adequate competency now to fully conduct these tests and perhaps only 6 who wish to be available?

Dr. MILLER. Perhaps in terms of directing these tests, but I believe that these people certainly could direct many more people.

Mr. ROGERS of Florida. But you are in agreement with Dr. Cannon?

Dr. MILLER. There certainly are not many people particularly concerned with research on chemical carcinogenesis.

Mr. ROGERS of Florida. Thank you. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Younger?

Mr. YOUNGER. I would like to have each of you speak on the question of pure foods, to express your own view as to whether in your opinion Food and Drug ought to have any discretion whatsoever in these cases.

I think that is the point that we have to decide, as to whether in your opinion any latitude, any setting of standards should be allowed the Food and Drug. I would like that in the case of each one of you.

Dr. DARBY. You have heard this request. Dr. Miller, would you like to comment on this?

Dr. MILLER. Certainly they should be allowed discretion. These people are extremely competent in their field, but they can't be expected to know all the ins and outs of every new type of compound that comes up before them. Here is where I believe they have to have the opportunity to go out and seek, perhaps through the National Academy of Sciences, a competent board to help them in making these decisions. Obviously, they have to make the decision.

Mr. YOUNGER. In regard to the Delaney amendment, that is what is confusing. Now right within Government we have differences of opinion. Mr. Clarkson, who is the Associate Administrator of the Agricultural Research, who came up before the committee and stated category that he did not believe that Food and Drug ought to be hamstrung with any kind of amendment that did not allow them to set some kind of standards.

Dr. MILLER. Might I just point out something? I have been quite interested in reading through this food additives collection of all the past hearings. You will recall that before the present food additives amendment was passed, that the Department of Health, Education, and Welfare was of course asked for their opinion, and they sponsored a bill. This bill did not have any statement in it about cancer producing substances. It is very interesting that the testimony of Mr. Larrick given there stated this, and I am quoting Commissioner Larrick:

> This bill bars the use of an additive unless it is established that it is without hazard to health. Thus the bill would prohibit the addition of any chemical additive to the food supply unless adequate evidence acceptable to competent scientists shows that it will not produce cancer in man under the conditions of use proposed.

It is obvious that they felt that they had the complete authority to do what needed to be done without having it spelled out in so many words, with the possibility of a restriction occurring that was not intended perhaps in the bill.

The CHAIRMAN. Doctor, I understand, however, that you take the position that there is no tolerance at all under the language in the food additives amendment.

Dr. MILLER. Yes.

The CHAIRMAN. And under the language that is now in this bill?

Dr. MILLER. There is no tolerance. It comes under the statement as I see it in the first part of (b), line 11, "is found to induce cancer when ingested by man or animal." I, for example, do not feel that this emulsifier that we heard about this morning that produced bladder tumors when fed in 25 percent of the diet, an astounding level, is a carcinogen. I mean this happened indirectly. At the 10 percent level nothing happened. At the level it would be used in human food, I cannot believe it would have this effect. I am looking for the report by the Food Protection Committee on the subject of the emulsifier. It certainly strikes me that this compound has been tested extremely well. The only thing against it is that when tested at 25 percent of the diet, it produced this syndrome. In some animals in a more limited test at 20 percent of the diet nothing happened. If the decision had not been made to test the emulsifier at 25 percent, as far as I can see this question would never have arisen. The point is where do you stop?

The CHAIRMAN. Are you in a position to state, Doctor, as to whether or not in your opinion the Food and Drug Administration should have the authority to establish any tolerance at all?

Dr. MILLER. Well, as I was planning to state in my comments, I think it should in very dubious cases of carcinogenicity, "as for example this compound that produced these bladder tumors when fed 25 percent of the diet." I think they should have that discretion.

Mr. DINGELL. Mr. Chairman, may I ask a few questions at this point?

The CHAIRMAN. Yes.

Mr. DINGELL. Doctor, your last statement, in cases of very dubious carcinogenicity, I believe those were your words——

Dr. MILLER. Yes.

Mr. DINGELL. You say that discretion ought to be given. What you are really saying is that they ought to be given a scientific discretion to determine whether or not these substances are actually cancer producers.

Dr. MILLER. Right.

Mr. DINGELL. And it is to this discretion that you have been addressing yourself?

Dr. MILLER. Yes.

Mr. DINGELL. And not the discretion let us say as to the fixing of tolerance levels for known carcinogens, isn't that it?

Dr. MILLER. That's right.

Mr. DINGELL. And as a matter of fact you do not advocate the fixing of a tolerance level for any known carcinogen weak or strong, do you?

Dr. MILLER. On which there is good scientific agreement that it is a carcinogen.

Mr. DINGELL. So we then resolve ourselves to this premise and not to the other premises, and to this precise point: That scientific judgment should prevail as to the first point. One, whether the substance

is a carcinogen in fact, and that this should be a question of sound scientific judgment and discretion, is that correct?

Dr. MILLER. Yes.

Mr. DINGELL. You do not address yourself to or support the thesis that judgment or discretion should be given in the fixing of tolerance levels for known carcinogen, do you?

Dr. MILLER. In human food.

Mr. DINGELL. In human food; yes?

Dr. MILLER. Yes; that's right.

Mr. DINGELL. In fact you would very strongly oppose the fixing of a level of tolerance for a known carcinogen in human food, is that correct?

Dr. MILLER. On the basis of our present information in carcinogenesis, that is correct.

Mr. DINGELL. And you say on the basis of our known information on carcinogenesis. Your reason for saying this, Doctor, is simply that presently we do not have sound scientific knowledge upon which we may base a transfer of information let's say on test animals to human, except in very narrowly isolated cases and then possibly not too good at that point; am I correct?

Dr. MILLER. Yes.

Mr. DINGELL. Now let me ask: Is there any member of the panel who says that tolerance levels can be fixed and should be fixed for known carcinogens?

I notice Dr. Zavon over there. Do you make that statement?

Dr. ZAVON. I would like to go into this in detail in my statement if you will permit me to delay until that time.

The CHAIRMAN. I think as a matter of fact that we probably should move on to let each one of these gentlemen have their say. That will be a more orderly method of procedure in making a record on this.

Mr. DINGELL. Thank you, Mr. Chairman.

Dr. DARBY. Dr. Kensler?

Dr. KENSLER. I would like to ask Dr. Miller a question or two. It is my understanding that the definition of a carcinogen is a chemical which has been shown to produce a significant, a statistically significant incidence of cancer, and that therefore this material which he is talking about is by definition a carcinogen, and is covered by the Delaney amendment.

I would then like to ask him the second question: Would you be willing to eat or have in your food a few mictograms of this material? Do you think this would represent any hazard to you or to anyone else?

Dr. MILLER. There is the area where we just don't have any information. I am personally not very concerned about these extremely tiny amounts, but it is the difference between knowing that a particular compound is in food and knowing that it is a strong carcinogen when you test it experimentally, and it is a difference of knowing whether at the tiny amount that is in food, does it constitute any hazard? Now my personal feeling is that in very tiny amounts it does not constitute any hazard.

Dr. KENSLER. May I say if we accept your definition, that it is not a carcinogen, then you would be willing to eat it, is that right?

Dr. MILLER. Are you talking about this emulsifier?

Dr. KENSLER. Yes.

Dr. MILLER. Yes. I have no question about that subject.

Dr. DARBY. I think part of this problem, Mr. Dingell, lies in what you mean by a carcinogen and what I mean and what Dr. Miller, Dr. Kensler, and other people in this room mean.

I think that if you put your question which you addressed to all members of the panel, for which there has not been an answer, I think if you put this to them, with a very clear definition, which would take us a couple of days probably of discussion, that you would find that there would be a real area of agreement.

I think, on the other hand, that as long as we are using the term with different meanings, that you will find considerable differences of opinion. And this difference is invariably going to be concentrated at this level that we are discussing now. Reduced to simple terms, it is: Where there is a question and you have got three scientists together, whether they would classify something as a carcinogen or not. Clearly, this depends on what they each mean by a carcinogen.

Mr. DINGELL. Doctor, this particular point is the point we seem to be wandering around in with a little bit of confusion. Is there a simple and quick definition that this committee can get as to what constitutes a carcinogen?

Dr. DARBY. There is one which has been given at least. It will require the definition of one or two other words.

It is on page 5 of the FPC report. This at least was the definition arrived at by the Subcommittee on Carcinogenesis of the Food Protection Committee. By way of background I might read that—

A tumor or neoplasm is an abnormal mass of tissue, the growth of which exceeds and is uncoordinated with that of the normal tissues, and which generally persists at the same excessive manner after cessation of the stimuli which evoked it. Tumors or neoplasms are customarily divided into two categories, benign and malignant. A benign tumor ordinarily possesses such characteristics as structure typical of the tissue of origin, slow growth, and growth that is only expansive—

that is noninvasive.

Usually with capsule formation. It does not metastisize.

That is, it does not go out to other parts, appear in other tissues, or in other parts of the body.

A malignant tumor in general possesses some or all of the following characteristics: Atypical structure, rapid growth, often with many mitotic figures, infiltrative growth with contiguous tissues, occurrence of metastasis and if untreated usual progression to a fatal ending. The general term "cancer" refers to all kinds of malignant tumors.

Then dropping down to the bottom of the page:

"Tumorgenic substance," "carcinogen" are terms used to designate a chemical, physical, or biological agent which has been shown consistently to produce tumors. A carcinogen is a tumoragen that produced malignant tumors.

Mr. DINGELL. That would be the scientific definition of a "carcinogen" for purposes, then, let us say, of the bill presently before us; is that correct?

Dr. DARBY. Again you must qualify—by what testing procedure; that is, what route of administration, and so on. So that it is the need to specify these that gives us considerable concern. Again, I think all people who have expressed themselves have said we favor the oral route of testing.

Dr. STEWART. No; they did not say that.

Dr. DARBY. All right.

Dr. STEWART. Don't put words in my mouth now. Speak for yourself.

Dr. DARBY. Wait until I finish, then, and let's see if you agree with the rest of this sentence.

They favor the oral route of testing as a must in the study of food additives; however, that there are other routes which should be used. Dr. Stewart just disagreed with me because he thought I wasn't going to include any other routes. The EPC, the subcommittee of which Dr. Stewart was not a member, came up with this same recommendation, that you test using other routes.

However, when you then classify these results based upon these findings, the judgment then may come in as to whether by a given route of administration or by a given method of administration, which produced a tumor or a cancer, you should then classify this chemical as a "carcinogen." For example, the concentrated sodium chloride injected under the skin; does this mean that sodium chloride is a carcinogen?

Now, if we merely at that time take the initial definition which I read you, you would, I think, be forced to classify this as a "carcinogen." On the other hand, if you are willing to exercise certain scientific judgment here, I think you would not classify sodium chloride as a "carcinogen."

Mr. DINGELL. Doctor, do you or any member of the panel here interpret the language of the Delaney clause that appears, the cancer clause that appears on page 10 of the bill as denying a sound scientific judgment to the practitioner who does research to determine whether or not this substance is in fact a carcinogen?

Dr. DARBY. Yes; I feel that it can be so interpreted personally. This is my personal opinion.

Mr. DINGELL. Doctor, in your experience has it been so interpreted?

Dr. DARBY. This has not been applied. This is a law under consideration.

Mr. DINGELL. But, as a matter of fact to your experience in the several years—you were a member of the previous panel, as you recall—in the several years that this particular clause has been in, has it been properly applied. Has it been a stultification or elimination of sound scientific discretion and judgment by the Secretary?

Dr. DARBY. The basis for the decisions which have been made, the data have not been made public, and it would be impossible for me to express an opinion on that without seeing the record of the basis of the decision.

Mr. DINGELL. But you have no reason to assume that it has not been done in a fair and proper way with proper weight and value given to sound scientific opinion, do you? I mean, you have no reason to assume that there has been——

Dr. DARBY. I have no reason to assume that there has been an absence of attention to scientific judgment but, as I say, without public information, I think you are asking for an expression or opinion on something which is impossible.

Mr. DINGELL. I merely state that you have no reason to assume that there has been an improper scientific judgment or an abuse of scien-

tific judgment or discretion made. In other words, we have nothing to indicate that the Delaney amendment has resulted in any stultification of scientific judgment in recent times. Have you?

The CHAIRMAN. I don't know that we are here for this purpose. I wonder if we could not proceed and let them express their opinions.

Mr. DINGELL. I will be delighted to, Mr. Chairman, if you will let me ask one more question.

The CHAIRMAN. But you are asking him for opinions as to whether or not somebody is administering the law correctly.

Mr. DINGELL. We have had a tremendous number of opinions on that point already, Mr. Chairman. I don't think one more will hurt this record appreciably.

(Discussion off the record.)

Mr. DINGELL. Doctor, I would commend to your very careful perusal the language that was mentioned this morning earlier by the gentleman from Georgia, Mr. Flynt, wherein he read about the last four lines of the Delaney amendment, and said—

shall be deemed unsafe and shall not be listed for any use which will not result in injection if after tests—

now listen to this—

which are appropriate for the evaluation and safety of additives for such use or after other relevant exposure of man or animal to such additive it is found to induce cancer in man or animal.

Now my question is: Is there anything in this language which denies sound scientific judgment to the researcher in these fields or to a careful practitioner in research? Quite the contrary. As a matter of fact doesn't it give full discretion to make a sound determination as to whether or not the substance is in fact a carcinogen? And that for this the discretion rests in the scientist and not in——

Dr. DARBY. I think we had a discussion of this, this morning, and I do not feel qualified to answer the legal question, the legal interpretation of this total paragraph, and I doubt that one can take a segment of it and examine the interpretation of a segment of it without looking at the total. I think as I understood the discussion this morning, with the Chair at that time agreed, that there is, there might arise a different interpretation of this section. This is also my personal interpretation of the whole segment. But this is really a legal question upon which I think you gentlemen should have a better basis than we to decide.

I think we can point out to you and help in the elaboration of the difficulties as we see them, and perhaps express our personal opinions of the matter. But ultimately these are going to have to be decided by those responsible for the writing of the law, which should be as unambiguous as possible.

Dr. Kensler, you have been eager to say something here.

Dr. KENSLER. I did want to point out that the example which Dr. Miller has been discussing and which I mentioned this morning is something which has produced bladder cancer in animals when ingested. Therefore, as I understand these terms, it by definition is a "carcinogen."

Therefore, I understand, the first part of this color additive provision, it has been found to produce cancer by ingestion and is therefore declared unsafe and cannot be used.

Mr. DINGELL. Let me then take your definition.

Are you in favor of the use of the substance of this sort in human food?

Dr. KENSLER. I am in favor of allowing the Food and Drug Administration the right to request a scientific expression of opinion on this particular point, and on other specific instances where to my mind the level of the test has been unreasonable.

Mr. DINGELL. You are differing with whether or not this substance is a carcinogen rather than whether or not it should be used, are you not, Doctor? Isn't that really the essence of it?

Dr. KENSLER. I think by definition it is a carcinogen. It has been fed. It has produced cancer.

Mr. DINGELL. The next question is do you advocate the use of this substance in food?

Dr. KENSLER. I think the matter deserves serious study.

Mr. DINGELL. That is not an answer. If you don't approve the application of the Delaney clause to a substance of this sort then you should say "I favor its use in food."

Dr. KENSLER. Let me put it this way: As Dr. Miller stated, he personally would not object to the presence of small amounts of this material in the diet as he does not recognize it as representing a hazard. I feel the same way.

Mr. ROGERS of Florida. May I ask one question?

The CHAIRMAN. If you will pardon me, gentlemen, I am going to have to insist that we give these other members an opportunity here after your question.

Mr. ROGERS of Florida. Dr. Kensler, just one question. In determining whether it is a carcinogen or not, what you are saying, is if you had tested it at 10 percent it would never have been classified as a carcinogen?

Dr. KENSLER. That is right.

Mr. ROGERS of Florida. Whereas if you tested it at 25 percent it will be.

Dr. KENSLER. That is right.

Mr. ROGERS. So what are we going to do?

Are we going to test everything at 10 percent, 5 percent, 2 percent, 1 percent, or 25 percent?

We don't know. That is what we need to find out from you gentlemen.

Dr. DARBY. Mr. Harris, if I may we will proceed. I will introduce Dr. Blum.

Dr. BLUM. I am a Ph. D. from the University of California. I have for the last 20 years been associated with the National Cancer Institute, and at present I am also a visiting professor at Princeton University. During these 20 years I have been concerned principally with the study of the carcinogenic action of ultraviolet light and subjects pertaining thereto.

Within the last 2 years I have been able to complete a quantitative study which describes this process and which I think is the only process of carcinogenesis for which we as yet have a quantitative description. In the last few months I have been trying to make some sense out of the data on chemical carcinogenesis that exists in the literature, and I think recently with some inklings of suc-

cess. I would point this out to restrict the area in which I feel qualified to speak. Certain things come out of this analysis of the ultraviolet that I think will apply in the long run to chemical carcinogenesis; until we know differently, I think we must assume they apply. These things are that the process is cumulative, and for all practical purposes, irreversible and nonthreshhold. I say for all practical purposes.

I don't want to debate the question as to whether or not a real threshhold exists, because I don't think it is of great significance in this regard. Now for this reason I believe that any setting of tolerance levels is really impossible at this time except in some arbitrary manner. And I may add my belief that the setting of arbitrary tolerance levels gives a sense of undue security which I think it might be well to avoid.

I want to say a little as to why this is true—as to why we can't set tolerance levels. The problem of carcinogenesis I believe has to be assayed somewhat differently than is done in most pharmacological or toxilogical studies. I don't want to say that the methods of dosage are different but that the mechanism we are studying does have some unique characteristics not found elsewhere. A cancer is a growing body and it has a curve of growth, and unless we understand that growth curve we can't understand much about what the quantitative relationships of carcinogenesis are. In the case of ultraviolet light we do have some approach to an understanding of the growth curve.

This says that a cancer may start to grow very slowly and speed up, or it may grow at a steady pace. In either case there is a long time during which we have no way of detecting the cancer, and the only measure we have is the time at which it appears, the time from the application of the carcinogen, or the first of a series of carcinogen doses, until we can see the cancer. What we do of course is to try to measure this time in a population of animals. Say we take 100 animals. All of them will not develop cancers at the same time.

There will be a distribution of the times of cancer appearance. Now suppose we give a carcinogen in a dose sufficient to produce cancers in all the animals, and we follow this curve. If we reduce the dose, the times become longer, and sooner or later we come up against the fact that the animals are dying of other natural causes, not necessarily having anything to do with the cancer. There is a limit to the lifetime of the animals. So if we push the dose down, we only observe the cancer in the most susceptible individuals, and we have to assume that some of the other animals would have got cancer had they lived long enough. So we are limited by the lifetime of the animals. We are also limited by the number we study.

If we study 10 animals and there is only 1 percent incidence, we probably miss finding any tumors. All right. Perhaps if we had studied 100 animals we should have found a tumor. If we studied 1,000 we might expect to find 10 tumors within the lifetime of the animals. Suppose we deal with a thousand mice and we find say 10 or say 1 tumor in this 1,000 mice within their lifetime, which is say, 2 years. I don't believe this can be very validly related to the occurrence of cancers in 180 million people of the United States within their fourscore and 10 years of life expectancy.

So I don't think we have any direct measurement that we can make as to percentage of tolerance limits. I would say in accord with what

Dr. Cannon has said, that a good deal of research at a basic level is important, not the more trying to test these carcinogens, but trying to find out something about the mechanisms and the relationships.

One of our difficulties at present is that we find substances which have very similar chemical structure that appear to be very different in their carcinogenic activity. Now this is easily explainable, because there is more than one factor concerned here. If we understood more clearly the relationships, and it may well be possible to learn about them by proper experimentation, we ought to be able to predict more carefully from the chemical structure whether the substance may or may not be carcinogenic. This is something one would hope to do, and I really believe that a good steady study of this problem over a few years, without attempts to go too far or too fast might give us much more basis of prediction of carcinogenicity than a great mass of testing of suspected carcinogens.

The CHAIRMAN. Thank you. Does any member of the panel have any questions that you want to ask of Dr. Blum?

Dr. KENSLER. I would like to read a statement from the subcommittee report which refers to the general problems of toxicity and hazard and does not apply to the cancer problem, in which, as you know, arbitrary margins of safety are set up based on extrapolation of dose response data.

I think it should be clear that this, and now I am quoting page 13:

> This arbitrary safety margin appears to be a satisfactory safeguard, but it should not be assumed that it guarantees all individuals absolute safety.

Now this applies to the general problem of toxicity of drugs and other materials, and I think that we have to recognize that arbitrary decisions have to be made even in other areas of pharmacology and toxicology, and that the cancer problem is not unique in that regard.

Dr. BLUM. I quite agree that in all our thinking about the cancer problem, to be realistic we have to assume that there is going to be a certain level of cancer in the population, a certain percentage incidence. Our only hope is to keep that level as low as we can, and prevent its increase if we can. And this means that any extrapolations, provided we have the basis for making them and I don't think we have in most cases, would have to be aimed at maintaining the cancer level at a certain percentage rather than the complete abolition of cancer.

The CHAIRMAN. Does any member have questions?

I understood from one of my colleagues a moment ago that you are a specialist in ultraviolet rays, is that true?

Dr. BLUM. Yes.

The CHAIRMAN. Would you comment on the effect of ultraviolet rays on cancer? I take a little once in a while and I want to know about it.

Dr. BLUM. I hope I can state very briefly what I think is the case. There are several lines of evidence that ultraviolet light is a principal cause of cancer of the skin of man. One of them is that all the skin cancers in the white race are limited to the exposed areas, principally to the face. In the Negro race there is very little susceptibility to the effects of ultraviolet, to sunlight, and also a very low incidence of cancer. There is good correlation between the incidence of cancer in the North and South of this country with the incidence of ultra-

violet radiation, of that part of the ultraviolet of sunlight which causes cancer. The correlation is not perfect but it is reasonably good. Then there is the evidence from experimentation that we can produce cancers in 100 percent of experimental animals by subjecting them to ultraviolet radiation.

Now I think this is a public health hazard, but one we can hardly avoid. I don't stay out of the sun and I would not advise everyone to, but I do think that it should be recognized as a hazard and that people who develop cancer of the skin or conditions that look supicious should take precautions. This I think is a much simpler problem than that of the chemical carcinogens.

The CHAIRMAN. Mr. Rogers of Florida, do you have any questions, sir?

Mr. ROGERS of Florida. I might say, that we have tried to fix our air in Florida where the ultraviolet rays are filtered out by the time they get to man.

Dr. DARBY. I thought it was only California that succeeded in doing that.

Mr. ROGERS of Florida. They have done too much of it.

Dr. BLUM. As I have said, I am a Ph. D. from the University of California and a native son from very close to the lower border.

Mr. DEROUNIAN. Dr. Blum, in further discussion of your statement on ultraviolet ray, do you mean if someone takes an exposure of about a minute a day from an ultraviolet lamp that that might be dangerous?

Dr. BLUM. I think that added to the natural exposure increases the chances of skin cancer.

Dr. DARBY. What is a safe level of radiation?

Dr. BLUM. This is a question to which I have a perfectly good answer. I am afraid I can't apply it today. When people ask me I say, "avoid excessive exposure," and then I leave quickly before they ask me what "excessive" is.

Dr. DARBY. Next I would like to call on Dr. De Eds.

Dr. DE EDS. I obtained my Ph. D. in pharmacology from Stanford University.

Prior to that time I taught biochemistry in the Laboratory at Western Reserve Medical School for 2 years and 1 year at Harvard Medical School. I have been in the Department of Agriculture since 1931. Prior to that time from 1927 until 1931 I was in the precursor of the National Institutes of Health, the old hygienic laboratory. By way of introducing my remarks, I would like to emphasize that when I joined the Department of Agriculture in 1931, that this was because the Department of Agriculture recognized the necessity of securing toxicity data on the various compounds that are of interest to agriculture. So you see the Department of Agriculture was actively interested in this game prior to the 1938 amendment of the Food and Drug Act.

They were interested at a time when the Food and Drug Administration was a part of the Department of Agriculture, at a time when the Food and Drug Administration did not have the excellent staff and facilities that they have today. The first problems that we got were problems concerning new organic pesticides designed to replace the time-honored pesticides of lead, arsenic and fluorine which were

in use to discourage the coddling moth in the apple orchards. The Department recognized that these long-recognized pesticides were detrimental, that lead and arsenic can produce anemia, that arsenic under certain circumstances is carcinogenic, and that the fluorides in quantities greater than the quantities that are recommended for fluoridation of the public water supply produced abnormalities of the teeth.

Well, now, among these organic pesticides that we have got I am very happy to say that we were fortunate in getting one that turned out to be a real prize. This was acetylaminofluorene. It will never be used as a pesticide. We discovered that it was a very potent carcinogen.

It would produce in our experimental animals cancer in a period of 408 days when there was as little as 40 parts per million in the daily diet. However, I want to hurry to point out that when the dietary level was 10 parts per million, we found no cancers in the lifespan of the rats. In acute experiments we were never able to give by stomach tube a sufficient amount of this compound to produce any evidence of acute toxicity, and animals that got as high as 1 gram per kilo of body weight, some of them survived longer than others, but notably none of them died with any evidence of cancer.

They died from such natural causes as pneumonia. This indicates the inability to demonstrate any cancer in animals following a single dose of this compound given by a stomach tube.

Now, it has been established in other laboratories—this compound I might say is now used as a research tool in cancer institutions all over the world. Recently, volume 5 on recent advances in cancer research, contains about 400 pages and 100 pages of this review represents an article written by Weisberger and Weisberger of the National Institutes of Health, and is devoted to a discussion of this compound and compounds related to it. So that this work of ours has been adequately confirmed. I think in view of its being such a potent carcinogen, the ability upon oral administration to produce a greater variety of cancers in a greater variety of tissues than most known carcinogens would certainly rank it as a very potent carcinogen.

And yet our data revealed that at a dietary level of 10 parts per million, one-fourth the amount that was effective in producing cancer, that at this lower level we did not get it.

Now it might be said that more work along this line should be done, and I will agree with that. In fact, I would be delighted to be able to participate in an extension of the work on acetylaminofluorene because I believe it is a useful tool in helping to elucidate some of the problems revealed in this discussion today. But here we have some evidence of a no-effect level with a very potent carcinogen administered orally, and I think that that is perhaps more significant than trying to determine whether or not there is such a thing as a no-effect level of a weak carcinogen.

Mention has been made today of the difficulties in knowing exactly what the experimental technique should be. And so I would like to say a few words about this, because it involves a point that has not come up in the discussions today, and this is the composition of the basic diet that is used in animals that are used for chronic toxicity studies. A while back we had the problem of studying the toxicity of cadmium. Now cadmium used to be used to coat the trays that go in the freezing unit of refrigerators.

It was used to coat food choppers. It was used to coat the meat-hooks on which the meat was hung in the butcher shops. We found that this cadmium in very minute doses produced the same effect on the teeth as was produced by fluorine; namely a mottling of the teeth, bleaching, and that it also produced a very severe anemia, so severe that in the efforts to pump this anemic blood around and keep the animal well oxygenated the heart increased to double its normal size, but perhaps even more important was the observation that it was a very potent inhibitor of certain enzymes particularly the enzyme bone phosphatase which is essential to the development of the skeltone. Now this observation was confirmed in Food and Drug laboratories when Dr. Calvary was the head or was in the position that Dr. Lehman is in today.

At a later date when our laboratory was moved to the western regional laboratory we no longer had access to the basal diet that had been in use when we were located at Stanford Medical School, and we had to buy a commercial diet. This commercial diet I might say gave good growth, good reproduction, good longevity. The final body weights, however, were not quite as high as they were in the animals when we used the diet that we had been accustomed to using while we were at Stanford Medical School.

Now this is important because somewhat later we wanted to use some of these cadmium poisoned animals as a tool in connection with another problem. We knew the dosage level. It had been confirmed by the Food and Drug Administration. We had the same strain of rats and we still had the same old bottle of cadmium.

And we set forth to produce these cadmium poisoned rats. Well, when we got up to 32 times the known amount of cadmium and still had not produced any cadmium poisoned rate I went back to Stanford Medical School and asked them, "Would you please give me a hundred pounds of that diet that we used to use?"

They did this and we repeated our earlier experiments and confirmed them. This is very important. Here are two diets. One is as good as the other from a nutritional point of view, from the ability to produce proper growth, proper fertility and longevity. One of them revealed toxicity of cadmium and the other one did not. From time to time whenever we can sandwich experiments in with our program, we try to track down and find out what is in one of these commercial diets that prevents toxicity. What is in the other one that permits its revelation?

We have compared these same two diets whenever we have an opportunity in toxicity studies on other compounds, and sometimes the diet that revealed cadmium toxicity is the protective diet for some other compound. The diet that did not reveal the cadmium toxicity is now the diet that reveals toxicity. And so we have a $64 question when we come to evaluate the toxicity of compound X—What should be the composition of the basal diet? It is not sufficient to say that it has got to be an adequate diet. I am worried about this. I don't know what the answer is. And I think if this is important in connection with studies on cadmium and various other compounds, it is very important in connection with studies on cancer.

Now I would like to pass on to another part of the discussion. This concerns selenium. I dare say many of you are aware of the fact

that in certain areas of this country, in the Dakotas, in some parts of Wyoming, the amount of selenium in the soil is such that the forage crops grown on that soil take up the selenium, they concentrate it, and this now becomes a source of toxicity in the poultry and the livestock that are dependent upon these forage crops. On the other hand, it has now been established that one one-hundredth of this amount of selenium which produces this undesirable toxicity is now essential.

It is essential to prevent exudative dyathosis in poultry, it is essential to prevent so-called white muscle disease, which occurs in cattle raised in areas where the soil is deficient in selenium, as up in Oregon. I understand this is such an area. The mature animals under these conditions do not show any abnormalities but the calves that are produced do show the abnormalities.

This is a matter of selenium deficiency. So now we have this situation. Here is a substance which in very minute amounts is essential. In levels 100 times greater it is toxic, and this toxicity is manifested in various ways. The amount that is toxic varies somewhat with the species. It can lead to malformations of the embryos. It can result in stillbirths. In the case of cattle it can result in the dropping off of the hoofs. In addition to this is the report that 11 out of 53 rats fed for a long period of time—I believe takes 18 to 24 months—dietary levels of 5, 7, and 10 parts per million of selenium, that 11 of these animals developed adenomas and low-grade carcinomas of the liver. Now if my understanding of the Delaney clause is correct, this evidence would militate against a request to put the minute amounts of selenium necessary in the poultry and livestock feed as a curative measure against white muscle disease in these areas where there is a deficiency of selenium.

I think here we have an excellent example of a compound which can manifest three different properties, its role as an essential material, its role as a toxic substance and then in long-term feeding experiments the ability to produce cancer. What are we going to do about it?

I think this is an excellent example of an instance where if the Food and Drug sees fit to do so, providing they are presented with a request to put selenium in the feed of animals in these deficient areas, and in the light of the evidence of its carcinogenic action, they might wish to not carry the whole burden of decision in this matter themselves, and I feel that they should have the right to call in others to help them, in this decision.

There has been discussion today on the subject of the surface active agents, the bread softeners and the fact that they were not necessarily to be regarded as carcinogenic per se, but are carcinogenic secondarily because of the formation of oxalate crystals in the bladder; and that if the level of administration was sufficiently low, and these oxalate crystals were not formed, and there were no bladder tumors. Well, now this problem is directly related to the situation that exists with the glycols, that is ethylene glycol and diethylene glycol. I believe it was in Food and Drug Administration that dietary levels of 1, 2, and 4 percent of diethylene glycol were fed for the period of longevity to rats, and on all three of these dietary levels, there were bladder stones.

If I can recall the data accurately, while there were bladder stones at the 1 percent dietary level, there were no tumors, but there were

tumors at the 2 percent and 4 percent. What concerns me now is whether diethylene glycol should be regarded as a true carcinogen. It is the same question that has been raised earlier today, because it is a secondary result of the formation of these oxalate crystals, the oxalate being a metabolic product of the glycol. The question becomes all the more pertinent when I call your attention to the fact that even glycerin, which everyone of us takes into our digestive tract whenever we eat fats, is metabolized in part to oxalic acid. Even one of the amino acids, glycine, a building block to protein, is metabolized in the part to oxalic acid. Gelatin is an example of a substance that is rich in this particular amino acid, glycine. Do we regard glycerin and glycine as carcinogens?

I don't know the answer. I have my own personal opinions, I don't think that anybody has ever developed cancer from eating gelatin, and I don't think they have developed cancer from the ingestion of fats, that is cancer traced back to the oxalic acid formed from these foods.

Nevertheless I feel that the subject of cancer is of sufficient importance that in any legislative act, it deserves some special attention as compared with other manifestations of toxicity. So I wonder whether it might not be advisable to have some specific requirement in the Food and Drug Act amendment to the effect that any toxicological data suggesting carcinogenic properties of a compound must be also evaluated by experts in the field of cancer.

I feel that the administrative decisions should be based upon the best possible scientific judgment rather than determined by legislation. In conclusion, I would like to mention one other thing, and that concerns carcinogenic activity determined by injection. Copper and cobalt are essential. In their absence anemia develops, zinc is also essential, but the reports in the literature are that zinc, copper, and cobalt injected produce cancer.

This is another example I think that while there is decided merit in the recommendation that tests for carcinogenic action by injection should be conducted, the results obtained must be weighed against the merits of the results obtained by oral administration.

Dr. DARBY. Thank you, Dr. De Eds. Are there any comments or discussion from the panel, questions?

Dr. KENSLER. I wonder if the discussion of whether something is carcinogenic or is not carcinogenic is not rather academic in terms of the Delaney amendment.

The Delaney amendment says if the additive is found to induce cancer when ingested by man or animal. So I assume that if cancer arose when this was ingested and not when it was not, that this would fall under this provision regardless of whether you wanted to call it a carcinogen or not, secondly, as a matter of interpretation, I don't know what this means really.

"If the additive is found to induce cancer," that presumably means the thing you are putting in.

And you are saying that in this case that it may be a metabolite. Well, we don't know but what for all carcinogens or most of them it may be a metabolite, which is the active thing, so possibly other things which you accept as carcinogens are not covered here.

So I think I would like to support your recommendation that you need a judgment permitting clause here rather than a legal banning of the material.

Dr. DARBY. Mr. Harris, do any members of the committee wish to ask Dr. De Eds questions?

The CHAIRMAN. Are there any questions at this time? You may proceed. I think there are several yet that have not had an opportunity to present their statements.

Dr. DARBY. Sir, then may we ask Dr. Levin to present his statement?

Dr. LEVIN. I am at present professor of epidemiology at Roswell Park Institute which is the cancer research hospital for New York State.

Before my present job I was assistant commissioner of health of New York State and before that I was director of the bureau of cancer control for New York State. My interest in this problem is largely from the standpoint of the human population and the public health hazards involved in cancer control. As a member of the committee which has come forth with this report which is before you on problems in the evaluation of carcinogenic hazard, it has been my impression, and I believe this impression is shared by other members of the committee, that there are really three types of problems concerned here.

One is the valuation of a wide spectrum of scientific data of varying degrees of complexity and of certainty. The second is the question of evaluation of where we want to place our major emphasis, whether we want to place our major emphasis in the direction of health, safety or in the maximum utilization of chemical additives.

Now this is not entirely a scientific problem because it involves value judgments as to those which are the more important. And the third type of question is the familiar one as to who bears the responsibility for making various types of decisions, scientific and otherwise.

Now with respect to the scientific data which is before us, I should like to point out that the human experience with cancer is such that we should not readily exclude the possibility that commonly occurring substances may in fact be carcinogenic for humans.

Our human population in the United States has an average probability of developing some form of cancer of 25 percent. That is 25 percent of our population will develop some form of cancer. The probability of developing any particular type of cancer, that is any single type, however, ranges from about 6 per 10,000 to 5 per 100. In other words, the probability of developing any particular type of cancer is what we would consider in an animal experiment quite low, and is in the range which is quite difficult to detect by most animal experiments.

The CHAIRMAN. You say 6 per 10,000 population?

Dr. LEVIN. Is the lower limit, and 5 per 100 the upper limit.

The CHAIRMAN. Is there any difference in the type cancer?

Dr. LEVIN. Yes. These are different types, and I have a tabulation which gives these figures for each type of cancer which I will be glad to insert into the record.

The CHAIRMAN. I wish you would present them to us for the record and for our information.

Dr. LEVIN. Now we also know that there are a number of chemicals which produce cancer in humans, and we also know that the history of carcinogenesis in the human has been fairly uniformly that the evidence regarding the human effect has preceded sometimes by many years the ability to reproduce this in animals, so that we cannot have 100 percent confidence in even a negative animal test, because our experience is that we don't know quite enough about what are the best tests then in animals.

Unfortunately also the quantitative aspects of this problem when applied to a population as large as ours are these. If you find no tumors in an experiment involving a thousand animals, you have no very good assurance that there is not in effect a tumor producing ability in this substance which would represent 11,000 cases in our population.

In other words, according to the laws of probability of statistics, there would be a 90 percent chance of finding zero if in effect we have a substance which produced only 11,000 cases in our total population, and if we did a single experiment involving a thousand animals. This is of course a limitation upon our ability to extrapolate from small numbers to large. It is not confined to the cancer problem but it is a real barrier to our confidence in the negative effects of substances applied to relatively small numbers, even as large as 200 or 300 animals.

I should like to point out that there is no general agreement about the mechanism of cancer genesis by chemicals, that there are many theories which have considerable evidence to support them, and that some of these theories are in a direction of a mechanism which is more like that of an infection, in which a single effective particle may actually produce the situation, the disease, more in that direction I say than in the direction of a simple quantity effect. Now it is not as simple as one or the other, and I wish to point out that our ignorance in this field is such as not to permit confidence in a simple quantitative relationship with respect to a tolerance level.

Now it seems to me, Mr. Chairman, that the crucial question is that arbitrary decisions in order to protect the public health must be made in this field. That the scientific decisions must be made by scientists. I think we are all agreed on that. I think there is a real question as to whether we should set as a matter of policy the type of testing, the way in which tests are interpreted, in such a way as to give the maximum probability of safety, which means we must accept some false positives, or whether we are willing to accept a certain degree of risk of including real carcinogenic chemicals, because regardless of what set of tests we adopt, and this is true of most biological tests and of tests in medicine, there will always be three types of decision made.

That is, the decision will be that the chemical is carcinogenic or that it is not under the rules of the test or that it is doubtful. In most tests there is usually this third category of "doubtful," and I think it is a question of how we deal with the doubtful tests that the real question of policy arises.

I would submit from the standpoint of the protection of the public health that the policy should be set so as to place the maximum emphasis on safety, even though we knowingly admit that this would exclude possibly harmless chemicals from our diet. From the stand-

point of the human experience as applied to this problem, I would point out that since not even a negative animal test is conclusive proof of safety, the acceptance of negative animal tests of evidence of admissibility is already in the direction of liberality of admission of chemical food additives.

I would submit as my opinion that it would not be in the interests of public health to depart from this liberality so as to set any tolerance except under exceptional circumstances, but that there should be latitude in the legislation which would permit the Secretary to seek scientific advice regarding scientific problems.

Dr. DARBEY. Any comments from the panel?

Questions?

The CHAIRMAN. You say you think there should be sufficient latitude to permit the Secretary to seek scientific judgments?

Dr. LEVIN. I do, sir.

The CHAIRMAN. Now after he seeks the scientific judgments and receives them, what should his authority be?

Dr. LEVIN. I think the Secretary then has the authority to put into effect a policy which should be expressed in the legislation as to whether our major emphasis should be on health and safety, or whether we should give equal weight to the inclusion of economically advantageous chemicals to our food.

The CHAIRMAN. In other words, he should have authority to either exclude it or accept it?

Dr. LEVIN. As expressed in the legislation.

Dr. ZAVON. Dr. Darby, I would like to ask Dr. Levin what he means by health?

Dr. LEVIN. I mean by health the remote possibility that a chemical, of which we know only the properties by means of the tests which are to be agreed upon may be carcinogenic.

Dr. ZAVON. Then this is in contradiction I take it to Dr. De Ed's example of a material which may cause cancer but which is essential for the continued health and well-being of the animal until such time as it developes cancer?

Dr. LEVIN. Yes.

Dr. ZAVON. You would exclude such materials.

Dr. LEVIN. I think this would be a special case and I think we tried to cover this in our report in the last paragraph in which we said:

> The use of any amount of a carcinogen as a food additive probably is justified only if one, value to the public—

in this case it would be to the poultry public—

> are such that banning the use would constitute an important loss or hardship, and two, that there is no reasonably good noncarcinogenic alternative.

Dr. ZAVON. May I ask: Would it be your opinion or the opinion of any other member of the panel that at the present time in the testing procedures set up any one actually looks for beneficial health effects or, on the contrary, when we test do we exclusively confine our observations to negative or neutral observations?

Is there any effort made in your experience or in the experience of other members of the panel to actually look for beneficial effects when you are testing for toxicity? Do I make myself clear?

Dr. DARBY. Do you wish to comment on this?

Dr. De Eds. I can only speak for what we attempt to do in our own group, and this is to keep our eyes wide open for anything that may develop in the course of our long-term feeding experiments.

Dr. Zavon. But in actuality, none of us I think actually concentrate on looking for things that don't develop. That is the point I am trying to make. That if in the normal lifespan of an animal you might expect a certain percentage of pneumonia to develop in your animal colony, the fact that it does not develop is not usually even recorded. Would this be an incorrect statement? I know it is true of our laboratory. No one has ever paid any attention to these things.

Dr. De Eds. We try to pay attention to such things and I will give you a specific example of what happens.

Another one of the organic potential pesticides was phenothiazine, and as a result of our toxicity data, which showed this was a compound of relatively low toxicity, the former Bureau of Animal Industry thought this might be worth testing out as an agent for removing intestinal parasites from farm animals. Tremendous quantities of this compound are now used today and it's incorporated in the salt bricks that are laid out on the farmer's land for the treatment of and removal of intestinal parasites. Now, incidental to our own observations, we studied the metabolic fate of this compound. To do this required saving up of an appreciable quantity of urine from the rats, since we were simply interested in finding out what the metabolites were, we did not pay too much attention to whether any bacterial contamination developed.

This might have been a foolish procedure, but as it turned out after collecting this urine for a period of weeks we observed that there was no bacterial contamination. This was rather surprising, so we set about to find out why this was. And out of this grew the observation that phenothiazine, as a result of metabolites that it produces, was a reasonably good urinary antiseptic. Our laboratory was at Stanford Medical School, and arrangements were made to study a series of 90 patients with urinary tract infections. It would probably be considered a pretty good urinary antiseptic today were it not for the fact that about this time the sulfa drugs and the antibiotics began to appear, and they are better.

Dr. Zavon. This, I would take it, is a rather unusual thing to observe, and perhaps would not be observed in the ordinary commercial testing laboratory or in many university laboratories.

Dr. De Eds. That may be, but we do make a special effort, and this is one of the things that I frequently discuss with members of the staff, and insist on them keeping their eyes open. Even the animal caretakers are instructed to report the slightest deviation in any respect whatsoever between the control and experimental animals.

Dr. Darby. Doctor, I think to elaborate on one point which I believe you intended to bring out if I interpreted your question properly, Dr. Levin spoke of protection of health. There is a consideration which can under special circumstances become particularly important in terms of health, not only dealing with an essential nutrient such as Dr. De Eds illustrated, but dealing with or considering a factor which permits a much larger production of a particular harvest or crop that is important in the food supply. Such, for example, as the control of some pest or some disease which threatens to destroy a total crop.

To give a simple example, with which fortunately we in the United States are not too frequently plagued, the locust pest, the "plague of the locust," which is a tremendously important problem economically in agriculture and almost yearly produces famine in some areas of the world.

In circumstances of this sort, again one may have to weigh health risks within the population, and I think if I properly interpreted your exchange, that you intended to make possible this type of consideration in leaving some possibility for judgment to be exercised.

Dr. ZAVON. Exactly. I feel that we must recognize that health is a far broader concept than the prevention of cancer.

Dr. DARBY. Are there any other questions from the committee before we go to the next panelist?

Mr. DEVINE. Mr. Chairman, I have a question. Dr. Levin, at this morning's session I believe you were—first, may I ask, Are you a physician?

Dr. LEVIN. I am an M.D.; yes, sir.

Mr. DEVINE. I believe you were the doctor on the panel that indicated that there is a greater incidence of lung cancer in the smokers than in the nonsmokers?

Dr. LEVIN. Much greater, sir; tenfold.

Mr. DEVINE. In percentage figures I mean is it considerably greater?

Dr. LEVIN. Ten times as much.

Mr. DEVINE. Does that apply also to cancer of the esophagus and the larynx or just in the lungs?

Dr. LEVIN. The difference is greatest for cancer of the lung. There are a few other forms of cancer which show an excess incidence but not of that magnitude.

Mr. DEVINE. Have you as a physician come to a conclusion with any medical certainty that the cause is smoking?

Dr. LEVIN. It is my considered opinion, sir, that the most probable reason for this phenomenon is that tobacco tar when inhaled by the human population is one of the causes of lung cancer.

Mr. DEVINE. Perhaps your colleagues may not agree with you.

I notice on this very distinguished panel that Dr. Kensler smokes cigars and Dr. Mider smokes cigarettes and Dr. Stewart smokes a pipe.

Would you say that there is any particular agreement among doctors on this?

Dr. LEVIN. I wouldn't think the evidence of what one does is necessarily pertinent to what one really thinks except after the fact. It took me 2 years to give up smoking myself.

Mr. DEVINE. Is that the reason you gave it up, sir?

Dr. LEVIN. That is the reason; yes, sir.

Mr. DEVINE. I might ask you one other question. I noticed in the paper within the last week or 10 days where some source has decided or concluded that perhaps leukemia or cancer of the blood has been caused by perhaps a virus. Is that a completely new approach to your cancer research?

Dr. LEVIN. No; it is not a new approach. It has been known for a long time that in animals leukemia can be produced by several viruses, in fowls. In fact it is a very important economic loss in

the poultry business, this form of leukemia caused by a virus, for which there is now a vaccine by the way.

And there is some evidence which indicates that this may be true of the human though this is by no means settled.

Mr. DEVINE. And one other matter to which you testified. I believe you said you would submit the figures for the record on the incidence of 6 in 10,000 in one situation and 5 in 100 on another. Just for our information 5 in 100 is in what particular area?

Dr. LEVIN. The highest incidence on a lifetime basis of one form of cancer in human population is cancer of the breast in females, which according to the figures which I am quoting, which is the life table experience of New York State reaches 5½ percent.

The CHAIRMAN. Dr. Darby, I wondered if we might not proceed now and give the other three gentlemen an opportunity to present their initial statement of views in the record in this afternoon, and then we may proceed in the morning with further discussion and questions.

Dr. DARBY. Very good. Dr. Miller?

Dr. MILLER. I received my Ph.D. in the subject of biochemistry and at present I am a professor in cancer research at the University of Wisconsin. My research for the past 20 years has concerned the mechanism of cancer production by chemicals in experimental animals.

Now we have heard a lot of discussion on many points, and I am going to try to keep my comments brief because of the late period of the day, and also because so many of the points that I was going to cover have already been covered.

I must point out that I too agree with several members of the panel who have expressed the opinion that the present anticancer clause ought to offer a little more latitude for the consultation of boards of scientists on dubious cases of carcinogenesis.

Now we have heard about a dubious case with the emulsifier. We heard about this very peculiar case with selenium, which at a sufficiently high level in a rat for a long time is carcinogen by that definition.

It is also apparently a dietary essential for certain species under certain conditions.

I would like to mention a couple of other cases where decisions are going to be hard to make. One is the case of arsenic. Now certain organic arsenicals, compounds of carbon with arsenic, are useful as livestock feed additives for the control of various diseases such as coccidiosis in poultry and infectious enteritis in swine. Now there is one form of arsenic, inorganic arsenite, which is regarded as carcinogenic by many people.

The reason for this is that massive ingestion of this material over a long time in humans for medicinal purposes led apparently to some cases of cancer. If these individuals take doses of inorganic arsenite for a long enough period of time, and this generally requires several decades, they can develop a condition of hyperkeratosis, particularly on the palms and the soles of the feet. Now even fewer of these individuals will apparently eventually develop skin cancers in or near these lesions. Now arsenic is, for better or for worse, an inescapable part of our daily diet. We ingest minute amounts of arsenic as part

of our daily diet through its natural constituents. The question remains is the even smaller residue of arsenic in a different form that remains behind in treated poultry flesh a hazard or not? Now this is a question that I can't decide. I am not an expert in this area. But I am sure this is an area where consultation of experts should be sought.

There is another interesting case which has developed from some rather recent data. I am sure that none of us here today would countenance the deliberate addition of a strong carcinogen such as benzpyrene, a carcinogenic polycyclic hydrocarbon, to the diet of humans. Now it is interesting that this carcinogenic hydrocarbon is formed by heating almost any organic material you can think of to a sufficiently high or charring temperature. And furthermore through continued work on analysis present methods for detecting this hydrocarbon are very good.

We can now detect a few parts per million and the method will probably get even better as time goes on. Now recently workers at the National Cancer Institute have found very minute amounts of this hydrocarbon in coffee beans that had been roasted at a high temperature until they were quite dark, and it was estimated that 5 cups of coffee a day from this particular dark roasted bean would provide of the order of a tenth of a microgram of benzpyrene. Now what is the carcinogenic hazard caused by this processing?

Here is a type of processing which results in the direct addition of a known strong carcinogen in very tiny amounts to a food that is in wide use. What is the implication of this work? I am not scared by this particularly small amount of hydrocarbon, but I simply raise this as a point showing how little information we really have on hazards of such small amounts of material.

Now, in addition to agreeing with the previous speakers that some provision should be made for seeking scientific advice in these dubious cases, I would also amplify the comment that I believe Dr. Darby made, that publication of the evidence on which decisions in these cases are made should be provided for as soon as possible.

Now the second point on which we were asked to express an opinion was whether or not a tolerance can be established in man, a safe tolerance for carcinogens. I believe I have already answered this in direct response to questions by the committee.

I would just like to point out that in the laboratory, with laboratory animals I believe that we can arrive experimentally in an operational sense at a noncarcinogenic level of a continuous exposure to a chemical carcinogen, and I frankly feel that from a scientific standpoint that such levels of exposure also exist in man. But I don't know how to determine these levels. The existence of species differences and the very sketchy nature of our knowledge on a mechanism of action of carcinogens makes it practically impossible to transfer directly data to man from information in the animal.

Now I would like to close with just a brief comment on a subject that I don't think has been brought up too much, and it may not seem too close to the immediate problem before this committee. But this is the subject of noncarcinogenic—that is by testing, even though our tests are imperfect alternatives for the technologically useful carcinogenic substances that now exist.

Surely this is the preferable solution to many of the problems that are plaguing this committee. Now obviously this would involve long-time costly screening for carcinogenicity of many compounds but this is already the order of the day, and I think the effort to find these noncarcinogenic alternatives is just the price that all of us are going to pay for living in this chemical age.

Dr. DARBY. Any comments?

Dr. STEWART. Daniel come to judgment.

The CHAIRMAN. I wonder if we could reserve our questions and give the other gentlemen an opportunity. I would like to get everyone's comments on the record today, that is initial comments, if we could, before we adjourn.

I don't want to keep you here too late.

Dr. DARBY. Dr. Tannenbaum?

Dr. TANNENBAUM. I received my M.D. degree at the University of Chicago, Rush Medical College, in Chicago. Before attending medical school, I spent a number of years in the general field of toxicology. At present, I am the director of cancer research at Michael Reese Hospital in Chicago. My overall interests over the past 25 years have been the relationship of nutrition to cancer, and factors aand mechanisms in carcinogenesis. Inasmuch as I am almost at the end of the testimony line and many of the comments that I would have made have already been discussed by my colleagues, it might be better to take up a few of the questions and problems that were brought up either by panel members or by members of your committee. I am treading on provocative ground, but perhaps some of my remarks might be helpful.

Some of the questions that were asked today, and some of the misunderstanding, are unavoidable in our present state of knowledge. It is complimentary that the members of the committee believe we know more than we actually do, but we cannot answer your questions of today with the knowledge that will be available 20 years from now. And even between "experts" there are differences of opinion.

I will now discuss some of the problems that have arisen.

Mr. Dingell brought up in his questioning the problem of what is a carcinogen. A simple, unqualified definition would state that a carcinogen is an agent that produces a tumor. But let us analyze this definition and point out only a few difficulties. We know that the animals utilized in investigations have a normal frequency or incidence of spontaneous tumors. The small incidence of the various types of tumors that occur spontaneously in some strains and species of animals might not be evidenced if they were sacrificed before reaching old age. However, if they are permitted to live out their full lifespan—for example, through the third year for mice and rats, infrequently done in most laboratories—one begins to see the emergence of tumors in various tissues. In small frequency, yes, but nevertheless they do arise.

Now for the point I wish to make. If one feeds one group of such animals a normal diet, containing a low-fat content, and another group this very same diet fortified with 5- to 10-percent fat (the fat may be lard, crisco, corn oil, et cetera) the groups of animals getting the high-fat diet will develop far more tumors of various types—and these develop earlier, on the average.

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Now, from the common definition of a carcinogen one would say that this added fat is a carcinogen. Obviously most of us do not think so. We believe that the high-fat diet enhanced the formation of normally expected tumors. This is an example of why we cannot always give an absolute, rigid answer to whether a particular agent is a carcinogen. Scientific judgment must be used here.

Does a particular agent produce cancers de novo—in other words, where they have never occurred before? Or does it accelerate or augment the normally expected frequency of tumors in the particular strain or species that is being utilized? The answer to these questions helps one to decide whether the material under study is a true carcinogen or a modifying or augmenting agent.

Discussion this morning centered about a compound fed in high concentration, which resulted in production of bladder stones followed by bladder tumors. Some people would consider this a true carcinogen, others would not. It depends on an evaluation of dosage or concentration, length of exposure, and other experimental conditions. In all likelihood, a group of qualified experts would come to a reasonable opinion regarding the potential hazard of this substance.

The question was brought up, I think by Mr. Rogers, with regard to routes of administration used in testing additives, and many of the people here have spoken to it. In general, I agree with what Dr. Miller has just said.

Here again, we can look upon the problem, in two ways, one the academic, the other the practical. Certainly from an academic viewpoint, studying a carcinogen in the laboratory by the various routes of administration, will teach us most about it. Not only does one have to consider routes of administration, but the fact that different strains of a specie may vary considerably in susceptibility. And, of course, there are great differences in species response.

The practical approach to evaluating food and color additives dictates that evaluation be based only on the action and effect it has on the body following chronic feeding. Here we are interested in what happens when a food or color additive is ingested over long periods of time.

But a scientist working in the laboratory might want additional data for his own knowledge, to know the response to other routes of administration. He might determine the effect of the additive when applied to the skin, subcutaneously, or even by other routes. In this way he might end up with data indicating that the additive is noncarcinogenic by all routes of administration; or noncarcinogenic by ingestion but carcinogenic by skin painting or subcutaneous injection; or some other combination of results. Here may be situations where scientific judgment, evaluation, and discussion with fellow scientists may provide more reasonable recommendations.

To repeat, it seems to me there ought to be what one might call a practical approach relying on the results of ingestion only, but that when the results were controversial, then one must study the additive by other means also.

The CHAIRMAN. Is this your method of reaching the scientific judgment?

Dr. TANNENBAUM. This is one approach, one additional way in which a scientist can be assisted in making a decision. If he has only

one piece of information, he has to make up his mind with only that one piece of information. But if he has many pieces of information, they may permit a better appraisal.

Finally, I would like to state my position on the two main questions on which you would like to have our opinion.

At the present time, it is not possible unequivocally to establish safe tolerances for even weak cancer-producing substances, although such may exist for particular implicated additives. First, this is due to the difficulty in translating to man the findings in animals since different species and tissues vary in susceptibility. Second, in laboratory work with animals and known carcinogens, it is possible to establish a minimum dose below which a particular carcinogen, given alone, will not produce tumors. Such data cannot be applied to the problem in man, since he is subjected over his lifetime to not only the same but to many kinds of additives, whose action and effects might be cumulative. Third, there is fairly good evidence that cancer-inducing agents produce irreversible changes in the tissues. Thus, if a tolerance were set for a single material, one could not be certain that the small effect produced by it, added to the cumulative effects of other possibly unsafe additives, might not result in a hazard.

In my opinion the spirit and meaning of the Delaney clause should be retained. If the Secretary and the Food and Drug Administration do not consult with outside governmental and nongovernmental qualified experts on special controversial problems, and I believe they do, this qualification might be included in the legislation.

Thank you.

Dr. DARBY. We will pass directly then to Dr. Zavon.

Dr. ZAVON. It feels like the Army. I was always the last one on the pay line.

My name is Mitchell Zavon. I am a physician. I am assistant professor of industrial medicine at the Kettering Laboratory at the University of Cincinnati and director of occupational health with the Cincinnati Health Department.

For the past 10 years I have worked, studied or taught in the field of environmental health protection.

The question asked of this panel is: Is it possible to establish a safe tolerance for food or color additives known to induce cancer in man or animals? My answer must be prefaced by the thought that this question, based on the Delaney clause, is an oversimplification of a complex problem.

My answer to the question is yes, it is possible to establish a safe tolerance for these materials. My answer, however, is not really relevant because I suggest that the right question has not been asked, and that the experts who have been asked to answer the question are in the position of the three blind men describing the elephant. We see only part of the problem and that out of context.

The proper question in 1960, and we are not talking about 1906, the proper question in 1960 is first to determine what is the ultimate object of our food protection laws?

Is it to protect our population against any conceivable hazard or is it to assure the greatest measure of good to the greatest possible number with a minimum of possible harm to the least number?

Once this question has been resolved, we can then experiment, present experimental techniques designed to achieve the intended purpose

in screening chemical compounds for inclusion in food or for any other purpose.

At the present time food additives, color additives, or anything that might get into food is tested for toxicity in animals, as has been well brought out here today. We look for a harmful effect or no effect. These materials are not studied generally for beneficial effects. The studies begin in animals, the studies end in animals. Nowhere does the human gain any consideration except as his reaction is postulated to be related to the rat and the mouse, the guinea pig, the dog, and the rabbit. Occasionally we use a pig.

When human experience is cited, the answer is that the data is invalid because of a multitude of factors. Despite this, it should be pointed out, as it has been obliquely here today, that what we know about chemicals causing cancer in humans we know because of observations in humans first, not because of initial observations in lower animals. If we conduct well-designed experiments in a valid manner, out of every 100 experiments there is a statistical chance that 5 will prove positive. If 100 materials are so tested, there's a 5-percent chance—Dr. Levin mentioned the question of false positives—there is a 5-percent change, purely on a random basis, that 5 will appear to be carcinogens.

Whether or not they are actually cancer-producing materials is not actually proven, but as I interpret the Delaney clause, as was said in this morning, they cannot be used in food.

There is not a generally agreed upon definition of the terms "cancer" or "carcinogenesis," but the Delaney clause uses these terms. There is no general agreement as to what are "appropriate tests" for the evaluation of materials for their carcinogenesity. Yet it is used in the law. Lastly there is no proof that results in experiments on lower animals can be translated into human terms at the levels under consideration for most color additives, or for that matter that we can extrapolate from other species to the human in any case with any high degree of validity.

Dr. Stewart mentioned this morning that DDT was included in the list of carcinogens. I am unaware of any proof of that, and if there is proof, it is my understanding that the Food and Drug Administration has evaluated this and concluded that the proof was invalid. The same is true of a number of other materials that have been listed as being carcinogens. However, radiation, which is a known carcinogen, certainly has been shown time and again to be capable of causing cancer. We have tolerances for radioactive materials in drinking water and other ingestibles.

Are we to assume that because we cannot control the cause of this radioactivity, that the established tolerances are valid, but if we can control the material such a tolerance is invalid? This just does not make sense to me.

Because cancer is a convenient end point, it is being emphasized as a measure of toxicity or separated out of the general run of toxic influences. There is no increase in the incidence of cancer of the stomach, intestines or other portions of the intestinal tract with the few exceptions that Dr. Levin mentioned. It should be noted that the increases in the organs he mentioned are on the base of a very low incidence to begin with so that percentagewise the increase may have

varied appreciably but if you started with 10 and have a hundred percent increase you only have 20. I am not familiar with the exact figures, but the organs which have had an increase in cancer incidence in the intestinal tract have usually have been recorded as having a very low incidence of carcinoma to begin with.

On the other hand, in connection with cancer of the stomach, as was mentioned, there has been a decrease in incidence. If food additives were a significant problem in causation of cancer, one would not expect such a decrease, considering the increase in food additives that we have seen in our food supply in the last several decades.

The Delaney clause requires proof of a negative. This is an impossibility.

We must use animals to test new chemicals because we have no alternative. But we must also utilize human existence.

Most of the fears conjured up with regard to cancer are to the effect that we don't know, therefore it might cause cancer. Therefore we can't take a chance.

I return to my first query. What is the objective of the food protection laws? There is insufficient reason based on present human experience to single out cancer.

The Food and Drug Administration can operate just as effectively, yet without the absolute legislative prohibition contained in this clause; a prohibition, which most important of all will tend to disrupt research and channel much needed effort into nonproductive testing. I might point out as an aside that our own laboratory will consent to do only a very minimum of this type of testing because it is our feeling that it is almost completely nonproductive scientifically, and leads practically no place. And when we get through with it, we are not sure that the answers means anything.

I am frequently called on the determine if a material is hazardous to the people manufacturing it, and incidentally as Dr. Stewart mentioned this morning, there are human populations exposed in the manufacturing process who should be studied but who have not by and large been studied in order to determine what the effects on are on them.

As I say, I am asked frequently to determine whether a material is hazardous to the people working with it. The retention of the Delaney clause will make it difficult if not impossible to get industry to support toxicological research at any level of exposure in excess of that required by the Food and Drug Administration.

Yet in order to adequately protect the worker, additional higher levels of animal experimentation may be desirable or essential.

(Discussion off the record.)

Dr. ZAVON. During the Second World War it was found that an increase in the number of destroyers in the Atlantic resulted in more German U-boats being sunk. It was suggested that putting all our destroyers in the Atlantic would result in the sinking of all the German submarines. It was, however, also realized that this course might result in the submarines fleeing to the Pacific and preying on our unprotected shipping in that ocean. Instead a plan was worked out to place an optimum number of destroyers in the Atlantic in order to sink the maximum number of submarines, but not discourage them

completely, and force them into the Pacific, and after all, the object was not to sink U-boats. It was to win the war.

I submit that the object of legislation such as we are discussing is not to eliminate all possible cancer producing materials, and I think Dr. De Ed has given a couple of perfect examples.

It is not to eliminate all known cancer producing materials, whether or not they are known to produce cancer in animals or man.

The object is the maximum well-being of our population. There is a serious question in my mind whether the Delaney clause will not cause great disruption of the type of research which has gone so far to improve the well-being of our population.

Thank you.

Dr. DARBY. Thank you, Mr. Harris.

The CHAIRMAN. Thank you very much.

Dr. DARBY. I take it you would like for us to postpone discussion until tomorrow.

The CHAIRMAN. I think it would be appropriate, since it is 4:30. You gentlemen have been here since 2 o'clock.

I am going to leave this question with you and maybe someone might want to discuss it. Is is possible to remove or eliminate all cancer producing agents and survive?

Dr. Levin, I believe you stated you had a list that you would submit to the committee. If you have that with you, I would appreciate having it. If you do not have it, if you can get it by morning we would like to have it.

Dr. LEVIN. I have it in the form of a slide. It—I don't think it will do you much good. I will reproduce this for you.

The CHAIRMAN. It is probably like some of these other things that have been presented here today. It would be hard for me to read, but neverthless if it could be reduced without too much effort.

Dr. LEVIN. I will be glad to do so.

The CHAIRMAN. Gentlemen, we thank you for your participation here today. We hope we have not taken too long in either of these sessions. It is about as interesting if not the most interesting panel discussion that I have had the privilege of participating in.

I say to you that we hope you will get a good night's rest and be able to come back in the morning with a lot of good questions and a lot of definite answers.

Thank you very much. The committee will adjourn until 10 o'clock in the morning.

(Whereupon, at 4:30 p.m., the hearing recessed, to reconvene at 10 a.m. Wednesday, April 6, 1960.)

COLOR ADDITIVES

WEDNESDAY, APRIL 6, 1960

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The committee met, pursuant to recess, at 10 a.m., in room 1334, New House Office Building, Hon. Oren Harris (chairman of the committee) presiding.

Present: Representatives Oren Harris, Moss, Dingell, Rogers (Florida), Springer, Derounian, Younger, Avery, Glenn, and Devine.

Also present: Representative David S. King, of Utah; W. E. Williamson, chief clerk; Dr. William J. Darby, department of biochemistry, Vanderbilt University School of Medicine, Nashville, Tenn.; Dr. Harold F. Blum, department of biology, Princeton University, Princeton, N.J.; Dr. Paul R. Cannon, Route 2, Post Office Box 56, Yorksville, Ill.; Dr. Floyd De Eds, U.S. Department of Agriculture, Western Utilization Laboratory, Albany, Calif.; Dr. Charles J. Kensler, department of pharmacology, School of Medicine, Boston University, Boston, Mass.; Dr. Morton L. Levin, Roswell Park Memorial Institute, Buffalo, N.Y.; Dr. G. Burroughs Mider, Associate Director, National Cancer Institute, National Institutes of Health, Bethesda, Md.; Dr. James A. Miller, McArdle Laboratory, University of Wisconsin, Madison, Wis.; Dr. Harold L. Stewart, National Cancer Institute, National Institutes of Health, Bethesda, Md.; Dr. Albert Tannenbaum, Medical Research Institute, Michael Reese Hospital, Chicago, Ill.; and Dr. Mitchell R. Zavon, Kettering Laboratory of Industrial Health, University of Cincinnati, Cincinnati, Ohio.

The CHAIRMAN. The committee will come to order.

I am glad to welcome this morning and call attention to the presence of our colleague, Mr. King, of Utah, who is interested in this subject. We are glad to have you with us this morning, sitting on on this panel discussion.

Dr. Darby, I believe when adjourned yesterday each member of the panel had expressed his views briefly, except, of course, Dr. Shubik, who was unable to be here.

I believe you advised me that you have a statement from Dr. Shubik that you would like to provide for the record.

Dr. DARBY. Thank you, Mr. Harris, I do have a letter from Dr. Shubik which was received yesterday. He states that his is enclosing a brief statement which expresses his views on the Delaney clause, and that he would be glad to have this introduced into the record.

With your permission, I should like to read it into the record, sir.

The CHAIRMAN. Very well. I think it might be advisable to indicate first that Dr. Philippe Shubik is associated with the division of

oncology, Chicago Medical School, 2755 West 15th Street, Chicago, Ill.

Dr. DARBY (reading):

For many reasons that have been thoroughly discussed in the food protection committee's recent publication "Problems in the Valuation of Carcinogenic Hazard From Use of Food Additives," it is not possible to determine the tolerance dose of an established carcinogen on an experimental basis. In spite of this, the Delaney clause cannot be defended since the phraseology used is too broad and may well encompass agents that might not be considered to be truly carcinogenic by any panel of experts in the field. I do not think that it is possible to institute such categorical legislation until it is more easily possible to define what is meant by a chemical carcinogen in more precise terminology. Such terminology must be able to exclude the occurrence of tumors in experiments that may not be directly attributable to the chemical nature of the test substance. I cannot conceive of such a definition at the present time, although I am sure that a panel of experts would be able to decide on individual cases without too much difficulty. It would, in my view, be an adequate safeguard for the population of the United States to insist that all food additives, cosmetics and other products to be covered by the present legislative inquiry, be subjected to test procedures adequate to detect carcinogenic action and that the results be evaluated both by the appropriate governmental agency and by a committee of experts to be selected.

That concludes Dr. Shubik's statement.

The CHAIRMAN. We are very glad to have this statement in the record.

Now, you may proceed, if you like, with the panel discussion.

Dr. DARBY. Thank you, Mr. Harris.

It seemed to me useful if, as chairman, I attempted to bring together some of the viewpoints and perhaps interpret these, which were expressed yesterday.

This is not a statement which has been reviewed by this panel. And I am certain that there will be discussion and no doubt disagreement with the chairman's interpretation of certain points.

Yesterday, each member of this panel introduced points which he considered pertinent to the consideration of the scientific aspects of color additive legislation. The discussion centered about the implications of the so-called Delaney clause on page 10, lines 11 to 22, of House bill H.R. 7624.

In your letter of March 2, 1960, to President Bronk, of the National Academy of Sciences, requesting the assistance of this panel, you noted that the Senate's approved bill, S. 2197, does not contain this clause. You further noted that the Food Additives Amendment of 1958, Public Law 85–929, does contain similar language. You stated that much controversy has developed over this clause, and that the question of retaining, modifying, or eliminating it is one of vital importance.

I wish as chairman of this panel to attempt to identify considerations and views expressed which I judge to be especially pertinent to this matter.

Despite the reservations expressed at times, the small points of scientific disagreements between some members of the panel, and the ever difficult problem of exact definition of terminology in this field, there seems to me to be large and important areas of agreement.

First, all members of this panel are, I am certain, unreservedly committed to the objective of providing the maximum health protection for our Nation. It seems unnecessary to state that all of us are against

cancer and agree that every effective measure should be taken to reduce this disease.

One view which might be taken is that in our state of ignorance as to the causes of cancer in the human, we should adopt measures to exclude even minimal exposures to any agent which in any amount might influence favorably the appearance of cancer in any biological species. I do not intend to be facetious when I depict the extreme to which this view might lead us.

One might imagine persons wearing lead armor to prevent exposure to X-radiation. They might live a subterrestrial existence, to avoid cosmic radiation. They might completely avoid sunlight, might breathe especially filtered and treated air, drink especially treated water, and refrain from smoking, from drinking coffee, tea, from eating any foods processed by roasting or smoking—from, in fact, consuming most foods—might even refrain from consuming most if not all naturally occurring foods. I am certain that no member of this panel recommends such position. We all want a sane attitude to prevail.

What is such a workable attitude toward foods which puts the problem of cancer in its proper perspective insofar as health and nutrition is concerned?

The answer to this question is the principle which should guide us in legislative planning.

You have heard that many substances which are naturally present in foodstuffs can, under special conditions, or conditions of very high intake, be associated with the occurrence of experimental cancer. To mention some of these which were noted yesterday, arsenic, selenium, radioactive materials, even lipids or fats, some precursors of oxalic acid and so on. One could extend this list considerably. For example, one could even question the lowly turnip and its several relatives. The vegetables contain a substance which might be considered suspect since it is a naturally occurring antithyroid substance, which has certain actions in common with aminotriazol. The content of foods vary greatly in all of these substances. I do not know, however, of any evidence which links the ingestion of these small amounts present in foods to cancer in the human. They are unavoidable, and any workable legislation must allow the decision by someone that this is the case.

Evidence and examples have been presented that in experimental animals there are levels of dosing with proved carcinogens which do not produce during the lifetime of the experimental animal any detectable effect. For these animals, therefore, one may conclude that these are harmless amounts of a carcinogen, under the experimental conditions employed. There is yet insufficient scientific knowledge to generalize and extend such conclusions for all types of compounds, or all animal species.

Properly executed experimental studies in animals provide a valuable screen for carcinogenses, but the screen is not infallible. The nature of appropriate tests will depend upon the individual compound under study. The interpretation of the significance of the occurrence of tumors or cancer during the course of or as a consequence of the administration of a test substance is dependent upon knowledge of the mechanism of the effect and other scientific information. Accord-

ingly, some members of the panel have indicated that a prohibitive statement in the law such as "shall be deemed unsafe if the additive is found to induce cancer when ingested by man or animal," is not desirable.

The need to rely on sound, informed, and competent scientific judgment has repeatedly been emphasized. It has been suggested that provision should be made for the use of an expert committee of scientists for review of controversial problems or interpretations. This might take the form of the scientific review committees provided for under the Pesticide Act, or it might be composed of members of Health, Education, and Welfare, Agriculture, and of outside scientists nominated by the National Academy of Science.

Several panelists have emphasized the need to make public experimental information or data upon which judgments or decisions are based, and to make this public at the time the decisions are announced. This is a recommendation made not only by members of this panel, but it was similarly urged by members of the 1957 Panel on Food Additives provided by the Academy.

It is believed that publication of such data would be in the best public interest, and would greatly strengthen support for sound decisions.

It was indicated yesterday, that in the opinion of some, full protection to the public would be provided without a specific cancer clause. Dr. Miller cited the Commissioner's statement on this matter in the 1957 hearings.

Cancer is but one of many considerations in the assessing of the safety of a proposed additive. Clearly a consideration of it must be included in deciding on the permissibility for use. An additive with a possibility of harmful effects of any sort in the proposed use level should and can be declared by the Commission as unsafe without the Delaney clause being in the legislation.

If, therefore, one simply identifies or recognizes cancer-producing effect as one of the properties upon which judgment must be based in determining safety, it would appear to me—this is my personal opinion—that adequate protection would be afforded by the law without the inclusion of the Delaney clause.

I think that a law providing this adequate protection combined with ample provision for scientific review and judgment, plus publication of the basis of decisions, would serve as a sound, effective, workable framework, which would assure for us the maximum health and benefit to the consumer, and provide us with that flexibility which is necessary for the adoption of new improvements as these are afforded by scientific advances.

As I say, I recognize that this is an interpretive summary. But it does seem to me that there are a number of points on which this panel is in considerable agreement. And I think it important that we recognize these points of agreements, and then turn our attention, if we may, to attempting to relate these, as I have tried to do, to the legislative question at hand.

Dr. Stewart?

Dr. STEWART. I think the record ought to show that this is Dr. Darby's personal statement. I don't think it really represents a sum-

mary of the views expressed by the panel yesterday. There are certainly many points that Dr. Darby has emphasized in his statement this morning that don't agree with my own personal opinions about this matter, and I think it would be a lot safer to have Dr. Darby's statement simply represent his own personal opinion, rather than a summary of the views of the panel.

Dr. DARBY. I have so stated that this is not a statement agreed to by the panel. It has not been reviewed by the panel. It is an attempt to interpret—first, to identify areas of agreement on scientific points, and then to interpret these into a relationship to the legislation. And I think that it is this that we should discuss. I would welcome discussions of these points. This is not intended as a final summarizing statement to conclude discussion. It is an attempt to point up discussion, Dr. Stewart.

Dr. STEWART. That is what the heading should be, then—an attempt to point up the discussion—not a summary of the views of the panel. With that I agree.

Dr. DARBY. Would you like to open the discussion?

Dr. STEWART. Yes. I might say a few things.

I think there are some "red herrings" in this. It was mentioned yesterday, for example, that sugar and salt in appropriate concentration and dose in some experiments have been shown to produce cancers. Now, I haven't gone over those particular papers. I don't know how many reliable cancer investigators in the country have studied this particular subject. I think when something like this comes up, it would be appropriate to have these substances studied by a number of competent investigators under a variety of experimental conditions.

The other point to be taken with respect to a substance—substances like salt or sugar, the amendment could specifically eliminate them from falling under the Delaney clause, or the Delaney clause might be modified somewhat as follows, with some sort of a statement like this—that with respect to salt and sugar, unless practical and scientific evidence has definitely shown that these chemicals or foodstuffs are not carcinogenic to man—everybody knows we eat salt, everybody knows we eat sugar. And these experiments that have been done to show that these are carcinogenic really need careful study before they are used as an argument against a law that really is designed to protect human beings from the addition to food of synthetic additives which are carcinogenic to animals under appropriate tests.

Now, Dr. Zavon mentioned yesterday that of 100 substances tested, I believe you said that 5 would show false positives.

Dr. ZAVON. There is a statistical probability of that.

Dr. STEWART. Now, have you published that?

Dr. ZAVON. I have the reference here for admission into the record.

Dr. STEWART. Has it been published in a journal?

Dr. ZAVON. It has been published in the Journal of the American Statistical Association, by Dr. Sterling, from my laboratory.

Dr. STEWART. I had not seen that particular reference.

Dr. BLUM. May I ask, Dr. Zavon, is that a blanket statement, with no qualifications as to the conditions. Doesn't it state the number of animals in the experiment? Doesn't it state some other things?

Dr. ZAVON. This is not a question of the number of animals. It is a question of the number of experiments, and the publication decisions—the title of the article is "Publication Decisions and Their Possible Effects on Inferences Drawn From Tests of Significance, or Vice Versa."

I would not attempt to qualify myself as a statistician, and, therefore, would beg off on a debate as to the validity or lack of validity of this publication. However, I note that it was followed up in the same journal by a letter from Gordon Tullock of the University of Virginia, in which he extended this concept. I would be happy to have both a copy of his letter from that journal, and the publication itself, submitted to the record for your perusal at a later date, if this is possible.

Dr. BLUM. I am still puzzled as to what the meaning of this is. Certainly there is the question of false positives, and so forth. But to these exact figures, I don't know quite how to take them.

Dr. ZAVON. Dr. Sterling, whom I believe to be a competent and recognized statistician, and has worked in this field for some years, has developed some data indicating that the lacunas of distribution of reports is or can be quite severe, due to the limitation of publication available for negative data. And, therefore, over a period of time, we get in the literature an accumulation of positive reports. As you have indicated, Dr. Stewart, you have to go over the reports themselves and the data in order to attempt to evaluate what has actually been done and its true significance. When we only get positive data or predominantly positive data reported, the tremendous energy, time, and consequently expense of running some of the types of experiment that we have been discussing here almost precludes repetition in the ordinary course of events. So that a positive statement has great difficulty in being refuted, however correct or incorrect it may be.

I am not attempting to impugn the validity of experiments. I am merely pointing out that it is extremely difficult to get repetition of the type of experimental procedure that we are talking about, because of the length of time necessary, the number of animals necessary, and all of the conditions surrounding this type of experimental procedure.

The CHAIRMAN. Are you asking that this be included in the record?

Dr. ZAVON. Yes, sir, I am.

The CHAIRMAN. May we have a chance to look at it?

Dr. ZAVON. Surely.

Mr. DINGELL. Mr. Chairman, may I ask a question at this point?

The CHAIRMAN. Well, I think they are in the midst of discussing a particular point. Let them conclude the discussion, and then you may inquire.

Will that be satisfactory?

Mr. DINGELL. That will be very satisfactory.

Dr. DARBY. Maybe Dr. Levin can comment on this and help us.

Dr. LEVIN. I believe, Mr. Chairman, there is probably an honest confusion here between two points, one of which is a part of standard statistical theory. And the other is the point that when people get positive findings on various experiments, they are more apt to publish them than when they get negative results. Now, the fact that

people are more apt to publish positive findings than negative I don't think is particularly pertinent to our discussion, since we are talking about tests which would be conducted specifically for the purpose of evaluating these additives under the direction or industry, or by the Food and Drug Administration. So this would not be a matter in which the evidence would depend upon publication.

Dr. ZAVON. I am sorry I have to disagree with you very energetically here, because if we conduct an experiment, and we get a negative report, and we give it to Food and Drug Administration for evaluation, and they clear the material—and I think Dr. Kensler suggested several instances in which this could have occurred, at a certain level—if, on the other hand, we, for one reason or another, go to a higher level, which gives a positive answer——

Dr. LEVIN. That is where the confusion is. You are talking about the evaluation of a test in one breath, and the publication of tests in the other. These are not the same things.

Dr. ZAVON. These are the same thing in this sense. If we publish positive, or we submit positive data, this is exactly the same thing. If we submit negative data——

Dr. LEVIN. Are you saying that publication and submission are the same thing?

Dr. ZAVON. In this sense they are, because we are submitting it to a regulatory agency for their perusal.

Dr. LEVIN. Obviously, they are not the same thing, and I don't see how you can make them the same thing, because you can submit data without ever publishing them. All you do is submit them.

Mr. YOUNGER. It is a public document, as soon as it is submitted?

Dr. LEVIN. I think the term publication in this article refers to publication in a scientific journal. Now, the 5-percent error, Mr. Chairman, simply refers to the fact that if you have a characteristic which occurs in a population in a given percentage—say 10 percent of our population has violet eyes. And you take samples from that population of varying sizes, repeatedly, you obviously are not going to get 10 percent each time. You are going to get variations around 10 percent. And the variations which you get will usually form a normal curve, according to one type of observation.

Now, we usually say that we will say that the actual percentage is greater or less than 10 percent only if the chances of finding such a difference is 5 percent. In other words, we will accept that much error. And that is immediately the 5-percent figure used as a measurement of acceptable statistical error. It has nothing to do with any particular type of scientific experiment. It does not mean that you will always find that a certain substance will produce a certain effect in 5 percent of the cases. It has simply to do with the normal variation in a characteristic which will be found if you sample repeatedly from a large population. This is standard statistical theory, I think, with which we are all familiar, and that is all it means.

The CHAIRMAN. I have had occasion to look over the information suggested for the record. Is that the pamphlet mentioned to me yesterday?

Dr. ZAVON. That is right, sir.

The CHAIRMAN. All right. And the other material, from your publication, that you submitted with it—is that from the journal?

Dr. ZAVON. This is from the Journal of the American Statistical Association.

The CHAIRMAN. All right. Let it be received for the record, then.

(The document referred to is as follows:)

PUBLICATION DECISIONS AND THEIR POSSIBLE EFFECTS ON INFERENCES DRAWN FROM TESTS OF SIGNIFICANCE—OR VICE VERSA[1]

(By Theodore D. Sterling, University of Cincinnati)

There is some evidence that in fields where statistical tests of significance are commonly used, research which yields nonsignificant results is not published. Such research being unknown to other investigators may be repeated independently until eventually by chance a significant result occurs—an "error of the first kind"—and is published. Significant results published in these fields are seldom verified by independent replication. The possibility thus arises that the literature of such a field consists in substantial part of false conclusions resulting from errors of the first kind in statistical tests of significance

It has become commonplace to speak of a "level of significance" in reporting outcomes of experiments. This significance level refers to risks of rejecting the null hypothesis, H_0, erroneously, and seemingly, has no other direct relationship to experimental work. The experimenter who uses so-called tests of significance to evaluate observed differences usually reports that he has tested H_0 by finding the probability of the experimental results on the assumption that H_0 is true, and he does (or does not) ascribe some effect to experimental treatments. What with the shortage of publication space and the desire for objectivity it often seems that the responsibility for rejecting a hypothesis rests squarely on a crucial value in a table of probabilities.

The risk of choosing the incorrect inference from experimental observation depends on a stated risk of rejecting H_0 if true and on the risk of failing to do so if H_0 is not true. Here is a dilemma which is dealt with in practice by two conventions. As Savage notes [7, p. 256] publications tend to report the results of the test as well as that level of significance for which the corresponding test of the relevant family would be on the borderline between acceptance and rejection (in the view of the author). The individual reader now makes his own test at a level of significance appropriate to him. How much uncertainty such a reader is willing to tolerate in rejecting a hypothesis that might be true will depend on his confidence in the methods of data collection, his views concerning the relevance of alternative hypotheses, or the weight he gives to evidence from other sources. In addition, scientific readers differ in fundamental strategies for games against nature and their tolerance for errors can hardly be expected to remain unchanged from one experimental problem to another. The type of reporting mentioned by Savage may well be most satisfactory for author and reader alike.

Some publications, notably of social science content, have adopted a somewhat more extreme convention. Here a borderline between acceptance and rejection of H_0 is taken as a relatively fixed point, usually at $\Pr(E/H_0) \leq .05$ or at that approximate region for which the probability, (Pr) of the outcome (E) of the experiment, calculated on the assumption that H_0 is true, is no larger than five in a hundred[2] [3] [6] [8]. General adherence to such a rigid strategy is interesting by itself but might have no further consequences on the decisions reached. However, when a fixed level of significance is used as a critical criterion for selecting reports for dissemination in professional journals it may result in embarrassing and unanticipated results.

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[1] The author wishes to express his thanks to Sir Ronald Fisher whose discussion on related topics stimulated this research in the first place, and to Leo Katz, Oliver Lacey, Enders Robinson, and Paul Siegel for reading and criticizing earlier drafts of this manuscript.

[2] The fact that some tables present only the 0.05 and 0.01 levels of significance encourages the use of these two levels of significance [8, p. 292].

TABLE 31.—*Outcomes of tests of significance for 4 psychology research journals*

Journals, all issues from January to December	Total number of research reports (1)	Number of research reports using tests of significance (2)	Number of research reports that reject H_0 with $Pr(E\|H_0) \leq .05$ (3)	Number of research reports that fail to reject H_0 (4)	Number of research reports that are replication of previously published experiments (5)
Experimental Psychology (1955)	124	106	105	1	0
Comparative and Physiological Psychology (1956)	118	94	91	3	0
Clinical Psychology (1955)	81	62	59	3	0
Social Psychology (1955)	39	32	31	1	0
Total	362	294	286	8	0

Table 31 shows that for psychological journals a policy exists under which the vast majority of published articles satisfy a minimum criterion of significance. The table summarizes the number of research articles in four publications. The journals were selected at random from four major areas of psychology. The table gives the distribution for the number of reports that used tests of significance to test H_0 and either rejected H_0 or failed to do so at $Pr\ (E \mid H_0) \leq .05$. In addition the table gives the number of experiments that were replications of previously published investigations. Column 1 gives the number of experimental research reports and column 2 gives the number of those reports that used tests of significance to choose among possible alternative hypotheses. Column 3 shows how many of the reports of column 2 managed to reject H_0 and column 4 counts the number of reports that failed to reject H_0 (either for the major hypothesis tested or for the majority of hypotheses under investigation.)[3] Finally, column 5 gives the number of experiments representing a replication of work previously reported in the literature.

Table 32 shows the same distributions as proportions of columns 1 and 2.

A glance at the tables is sufficient to show that most articles published during the year by the journals in question used tests of significance as aides in choos-

[3] Some explanatory remarks concerning table 31 are in order. Almost all of the 294 studies that used tests of significance were of a multivariable design. All evaluated observed differences against the assertion of H_0, however, H_0 was sometimes not rejected for all variables tested. The following rules were adopted in compiling table 31:

(*a*) The attempt was made to determine the major variable or prediction tested by the research design. Such was usually clear from the author's preliminary remarks; the multivariable design was most frequently used to control for conditions not covered by the experimental procedure. The level of significance for which H_0 was rejected for the major prediction was noted (if H_0 was rejected at all).

(*b*) If the design tested two or more variables for which no unambiguous decision as to major importance could be made, the lowest level of significance for which at least half the variables rejected H_0 was noted. If H_0 was not rejected for at least half the variables, the article was placed in the class of studies for which H_0 was not rejected.

(*c*) Where results from more than one research design were reported, an attempt was made to determine the one study deemed most crucial by the author and the level of significance for that study was recorded if it rejected H_0.

(*d*) If all studies seemed of equal importance, the lowest level of significance for which at least half the reported studies rejected H_0 was recorded. If H_0 was not rejected for at least half the studies reported, the article was placed in the class of studies for which H_0 was not rejected. (This special provision in 2 and 4 was not really necessary since for no single article were less than half of the quoted results in the significant category.)

(*e*) Two studies that obtained $Pr(E|H_0) \leq 0.1$ were included because the authors had expressly pointed out that they rejected H_0 since the obtained significance level was close enough to the conventional 0.05 to suit their purposes.

Since the Psychological Abstracts essentially attempt to present an outline of the major points made in almost all research articles of interest to psychologists the procedure used here could be checked for reliability with that publication. Of 100 research articles selected at random from volumes covering 1952 to 1957, 94 reported positive results, 5 reported negative results, and one was a replication of a previous study. These proportions agreed by and large with thhe total proportions in table 31. No comparison for use of tests of significance were made since that journal seldom reports results of statistical tests. However, the words "significantly different" were applied to most of the reported results.

ing among alternative experimental hypotheses and, at the same time, that nearly all managed to reject H_0 at the recommended level of certainty. It need not be assumed that the observed distributions are due to explicit editorial rules. The single factor contributing most to the selection of articles in which H_0 is rejected may be implicit agreement among authors. The term "publication policy" will be used here largely as a matter of convenience. In fact, the distribution of articles in psychological journals in general appears to be similar to the ones shown in the table and it seems likely that the authors selection rather than editorial policy accounts for the observed profession-wide selection. Whatever the reasons, the tables indicate what gets printed with a high probability; namely, research reports that use tests of significance and at the same time reject H_0 for the effects of treatments in the design.[4] To state the above more concisely:

TABLE 32.—*Percent of articles using tests of significance and percent of articles rejecting H_0*

Journals, all issues from January to December	Percent of articles using tests of all articles published (2/1)	Percent of articles rejecting H_0 of all articles using tests (3/2)	Percent of articles not rejecting H_0 of all articles using tests (4/2)
Experimental Psychology (1955)	85.48	99.06	0.94
Comparative and Physiological Psychology (1956)	79.66	96.81	3.19
Clinical Psychology (1955)	76.54	95.16	4.84
Social Psychology (1955)	82.05	96.88	3.12
Total	81.22	97.28	2.72

A_1 Experimental results will be printed with a greater probability if the relevant test of significance rejects H_0 for the major hypothesis with $Pr.\ (E|H_0) \leq .05$ than if they fail to reject H_0 at that level.

A_2 The probability that an experimental design will be replicated becomes very small once such an experiment appears in print.

With respect to A_1, it is not known how many research results either reject H_0 or do not do so, or, are submitted or not submitted for publication. However, it does seem clear (2) that pressure exists which leads to the selection of a very small number of publications from a large number of submitted manuscripts. From a commonly admitted tendency to acknowledge only the most significant findings, and from perusal of statements concerning publication pressures (2) one could infer another reasonable assumption:

A_3 A great many more experiments are performed than appear in the pages of professional journals.

With respect to A_2, the lack of replication of experimentation in psychology has been noted elsewhere (5). Replications are sometimes reported at professional meetings. Since such papers are rarely used as references unless they have been published they may be ignored as sources for widespread professional or scientific information.

The three assumptions are admittedly substantive in nature and strong supporting evidence for them, beyond that given here, is hard to come by. They may be taken as a fair statement of the prevailing conditions in which the scientific community is not equally aware of all experimental results. As a consequence, experiments for which $Pr(E|H_0)$ is large may well have a high frequency of replication by individuals who do not know that this particular comparison had been made previously, and that previous tests of significance had failed to reject H_0 at acceptable levels of significance. Once a study does result in a level of significance that meets this criterion, not only will it be published, but the likelihood of its ever being repeated appears to become very small. A picture emerges for which the number of possible replications of a test between

[4] It is interesting that the Journal of Experimental Psychology appears to set the pace for the use of statistical tests as well as for the selection of articles that reject H_0. Some years ago the same journal was used [4] to show that x^2 was consistently misused by psychologists. The authors noted at the time that analyses in this journal would be typical for psychological publications in general and that the expectation of finding sound statistical treatments would be better in that journal than in others.

experimental variates is related inversely to the actual magnitude of the differences between their effects. The smaller this difference the larger may be the likelihood of repetition. This chain is terminated apparently by an observation for which the relevant statistical test can reject H_0 with reasonable certainty. For any set of observed differences that are randomly variable (and which experimental observations are not?) a difference of some substance should then appear in print—irrespective of the actual state of nature. What credence can then be given to inferences drawn from statistical tests of H_0 if the reader is not aware of all experimental outcomes of a kind? Perhaps even more pertinent is the question: Can the reader justify adopting the same level of significance as does the author of a published study?

Two points are worth noting with respect to the last two questions. Both refer to the expectations a reader may form when he picks up an article in one of the journals of table 31 (or in a journal following like practices).

First the reader's best expectation is that the author will reject H_0. The probability that he will commit a type II error (accepting the null hypothesis when it is false) if he adopts the author's conclusion is, in consequence, extremely small. In fact, from table 31 it appears that this risk is scarcely more than zero. One may therefore conclude that any and all tests used by authors are of equally high power for the reader. This obviously was not true for the individual investigator who attempted to choose the most powerful test in the first place.

There is also another side to this problem. The reader's expectations are that H_0 will be rejected. What risks does he take in making a type I error by rejecting H_0 with the author? The author intended to indicate the probability of such a risk by stating a level of significance. On the other hand, the reader has to consider the selection that may have taken place among a set of similar experiments for which the one that obtained large differences by chance had the better opportunity to come under his scrutiny. The problem simply is that a type I error (rejecting the null hypothesis when it is true) has a fair opportunity to end up in print when the correct decision is the acceptance of H_0 for a particular set of experimental variables. Before the reader can make an intelligent decision he must have some information concerning the distribution of outcomes of similar experiments or at least the assurance that a similar experiment has never been performed. Since the latter information is unobtainable he is in a dilemma. One thing is clear however. The risk stated by the author cannot be accepted at its face value once the author's conclusions appear in print. It may be safe to conclude that pursuing statistical analyses under the conditions outlined here may have considerable less merit than psychologists like to ascribe to statistics in experimental design.

It would be unfair to close with the impression that the malpractices discussed here are the private domain of psychology. A few minutes of browsing through experimental journals in biology, chemistry, medicine, physiology, or sociology show that the same usages are widespread through other sciences. Some onus appears to be attached to reporting negative results. Certainly such results occur with lesser frequency in the literature than they may reasonably be expected to happen in the laboratory—even if it is assumed that all experimenters are outstandingly clever in selecting hypotheses. Perhaps the trend of our time is exemplified by the editors of a cancer journal who in a recent announcement took action to change the name of their yearly supplement from "Negative Data . . ." to ". . . Screening Data" [1, p. 619].[5]

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[5] This was pointed out to me by Charles Stevens of the Kettering Laboratory, University of Cincinnati.

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PUBLICATION DECISIONS AND TESTS OF SIGNIFICANCE—A COMMENT

(Gordon Tullock, University of Virginia)

The custom of only publishing research when it reaches a certain degree of significance is likely to lead to errors, not through repetition of the same experiments, but over many different experiments

The purpose of this comment is not to criticize Sterling's important article,[1] but to suggest that it has somewhat wider application than he implies. The specific type of error to which Dr. Sterling refers (p. 33) is the repetition of some given experiment by different investigators until one of them obtains a significant result, which is then published. I do not think this is at all a frequent occurrence. If an hypothesis had been tested by a number of independent investigators, all but one of whom had obtained negative results, the publication of the positive results of the single investigator who had had the good fortune to obtain a "significant" result would normally bring the others out in the open. A man who has devoted a good deal of time to testing a hypothesis with a given experimental design and has been forced to conclude that the hypothesis is incorrect will normally simply file his results. If, however, he sees an article reporting a similar experiment with significant results, he will at least write the editor of the journal in which it appears. Since this type of comment on articles is rare, I judge that the publication of experimental designs is rare.

But while this indicates that investigators have minds sufficiently independent that they seldom duplicate others' experiments by accident, it does not reduce the importance of Sterling's basic point. The necessary restrictions imposed on articles by the scarcity of publication resources does result in greatly reducing the confidence we can put in statistical tests of significance as reported in the literature. There is little difference, statistically speaking between the likelihood of a false correlation from 20 investigators all investigating independently the same false hypothesis with the same experimental design, or from the same 20 investigators investigating 20 false hypothesis. The same number of results of a given level of significance would be expected from either "design."

The moral of these considerations would appear to be clear. The tradition of independent repetition of experiments should be transferred from physics and chemistry to the areas where it is now a rarity.[2] It should be realized that repeating an experiment, while not necessarily showing great originality of mind, is nevertheless an important function. Journals should make space for brief reports of such repetitions, and foundations should undertake their support. Academics in the social sciences should learn to feel no more embarrassment in repeating someone else's experiment than their colleagues in the physics and chemistry departments do now.

Dr. LEVIN. I would like to point out, Mr. Chairman, this whole question of statistical evaluation of carcinogenic tests is discussed in our report to the Food Protection Committee in considerable length—the evaluation of these 5-percent errors and so forth.

Dr. STEWART. I would like to take Dr. Zavon up on another point he made.

You said——

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[1] "Publication Decisions and Their Possible Effects on Inferences Drawn From Tests of Significance—or Vice Versa," Theodore D. Sterling, Journal of the American Statistical Association, March 1959, p. 30.

[2] A good illustrative example of the practice in the physical sciences is A. B. Mah's "Heats of Formation of Alumina, Molybdenum Dioxide, and Molybdenum Trioxide," Journal of Physical Chemistry, 61 (1957), p. 1573. Dr. Mah repeated a series of careful measurements made by several other scientists. Since his work simply confirmed their's it was reported in the form of a brief note rather than in a full article.

The CHAIRMAN. Doctor, if you are going to another point, I promised Mr. Dingell I would let him ask his question.

Mr. DINGELL. I just want to ask this question of Dr. Zavon: Doctor, aren't you comparing apples and oranges? You are saying that there is a 5-percent probable error because on a statistical basis perhaps 5 percent of the cases might not be reported, and you might get a 5-percent error in evaluating a whole series of experiments, because perhaps an occasional erroneous experience will be reported. But you are not saying that this 5-percent error means that there is a 5-percent chance that any specific experiment is going to give a false report? And this is the precise point I want you to discuss.

Dr. ZAVON. That in essence is correct. As I understand the statistical theory, the statistical reasoning which Dr. Sterling has presented, it is this. If you test 100 substances—we are not talking about any one specific material—100 substances, or the same material 100 times, there is a 5-percent chance that irrespective of your original assumption—you might assume that they are not carcinogens—5 percent of those 100 tests he points out can come out positive under presently accepted statistical procedures irrespective of whether or not the material is a carcinogen. Now, Dr. Levin disagrees with me. And, as I said, I don't want to attempt to qualify myself as a statistician. I am merely presenting work that the statistician in our laboratory has developed for your consideration as one of the points to be considered.

I suggest that I am not competent to argue it. I question whether many of the members of the panel are competent in this particular area of statistical theory. Dr. Levin may well be the only member here who can discuss it.

Mr. DINGELL. I notice Dr. Tannenbaum, sitting next to you, has been nodding his head in disagreement.

Dr. TANNENBAUM. It would be better to have this problem discussed by Dr. Levin, as I am not a statistician. However, it does not seem reasonable or logical to expect a compound completely noncarcinogenic to result in the formation of tumors in about 5 percent of test experiments. Nor would one expect a potent carcinogen, tested under proper experimental conditions, to appear to be noncarcinogenic in about 5 percent of the studies that were made. On the other hand, with weak cancer-producing agents, it is statistically expected that a small percentage of experiments will not indicate their carcinogenicity—in other words, they will give negative results. One should not implicate statistical methods as the cause of the difficulties that arise in evaluating the biological significance of such borderline findings.

Dr. ZAVON. Mr. Dingell—may I answer one further point in regard to your question as an example of why I disagree with Dr. Tannebaum's answer?

Not too long ago I had occasion to take a very potent chemical, one which is widely used and try to duplicate some work that had been reported in a foreign medical journal. I took 40 animals, and administered this material by injection. I gave a dose that by calculation should have killed close to 100 percent of the animals involved. The animals were then divided into groups on a random selection basis, and treated with various types of antidote. Now, in the ordinary course of events, and intuitively I would have said if I gave them a dose that could be expected to kill close to 100 percent of the animals,

out of 10 animals so treated I would have expected at leaast 1 to die, and more probably close to 10. I was rather chagrinned to find that all those animals that should have died, didn't. This is despite the fact that those who got a dose—but not the antidote—they all got the same dose, a dose that would have been expected to kill 100 percent of the animals—none of those died. Therefore, I say, if you need an example of how your intuitive reaction can lead you astray, this is an example.

Mr. DINGELL. Just one more question. This 5-percent error—isn't this all the more argument for erring on the side of safety, rather than throwing the bill open, or throwing the law open to additional error? In other words, isn't our purpose here to err on the side of safety, or should we say because there is a probability of error, we should throw the whole thing out the window and not use any special care in the case of cancer?

Dr. ZAVON. No. I think we have to clarify——

Mr. DINGELL. That is the inference I get from your statement.

Dr. ZAVON. No, your inference is wrong in this sense; one, I don't think any member of this panel has remotely implied that we want to toss out all regard for screening for cancer. I think some of us, myself certainly—I won't speak for anyone else, although Dr. Darby mentioned it this morning—have contended that the law adequately sets up protection against cancer without the special mention in the Delaney clause. But the particular point I am attempting to make here, and the inference I would like to draw from it, is that if you test a large number of materials, and you keep on testing them, you can show that every one of the materials may be judged a carcinogen unless you review your data very carefully and interpret in proper fashion what is being shown experimentally. And I predict, and I know that—I won't put words in anyone else's mouth, but in private conversation with at least one other member of the panel, I know we were in agreement—we anticipate that there is a reasonable probability that in years to come there will be experimental evidence reported time after time showing, as Dr. De Eds did yesterday, that there are common items of our diet, which under certain conditions can cause an increase in cancer.

Mr. DINGELL. Let's not go into that again.

Dr. ZAVON. Well, this is the point, sir.

Mr. DINGELL. Let's address ourselves to the narrow specific point. The thing I get now from your statement is that you feel that the Food and Drug is not competent to properly apply the so-called Delaney cancer clause, or the Delaney cancer clause, is that correct?

Dr. ZAVON. No, sir, you are putting words in my mouth which I did not say.

Mr. DINGELL. If I am doing so, just be free to tell me.

The CHAIRMAN. Well, I think, Mr. Dingell, you can ask him the question. But I have observed that you are telling the panel what they say and what they believe.

Mr. DINGELL. All he has to do, Mr. Chairman, is say I am erroneous, and I will be delighted to be corrected.

Now, then, would I be fair in inferring that the Food and Drug Administration—that you do have some faith in Food and Drug—and that they have done a competent job in clearing these substances

which are carcinogenic, or they hold to be carcinogenic, with the scientific community generally.

Dr. ZAVON. Not enough information has been published for me to evaluate whether or not they have done a competent job.

Dr. DARBY. Mr. Harris, I wonder if it might not be helpful——

The CHAIRMAN. I am wondering, Doctor, if we are going to complete the statement of Dr. Stewart ultimately.

Dr. DARBY. I think it might be helpful if we permitted Dr. Stewart to continue. And I know there are a number of members of the panel have comments they would like to make. And since our time is limited—if we might get from the panel these points bearing on the scientific questions, I think it would give you the greatest assistance that we could provide.

Dr. STEWART. Well, Dr. Zavon made a statement that a chemical once tested for its induction of cancer, that that experiment is not repeated, or not likely to be repeated. Now, Dr. De Eds said yesterday that acetylaminofluorene, which he and Dr. Cox and his associates discovered some years ago, has been retested, how many times would you say, Dr. De Eds?

Dr. DE EDS. Well, at least—I wouldn't hazard a guess on the number, but it is a great many times.

Dr. STEWART. Up to 1953 it had been retested 85 times, and there are another 7 years of retesting to add to that.

Dr. DE EDS. I would have guessed close to 100 times. But I think I should also add that this is a rather special situation, I believe. The nature of the compound, the fact that it was a useful tool in cancer research, has stimulated this repetition. It has stimulated investigations into the effect of diet, the effect of change in hormone balance, and even taking a look at what the effect would be if certain chemical modifications were made in the chemical composition of the compound.

Dr. STEWART. Well, yes. What you say is true.

Now, I read from this NRC publication that butter yellow has been retested over 200 times, and betanaphthalamine over 30 times. If you take, for example, the policyclic hydrocarbons, including the dimethyl and the trimethyl 1,2 benzanthracene, they have been retested for carcinogenicity over and over again. I am just offering this evidence to show that your (Dr. Zavon's) statement is not entirely correct—that once a substance is shown to be a carcinogenic everybody forgets about it. That is not quite so.

Dr. DARBY. Dr. Stewart, may I suggest a possible explanation of this difference in statement?

I believe that the implication was that if one were considering a substance as a possible food additive, that if it is shown to be a carcinogen then one would back off of promotion of further testing. One would not pursue this.

Now, I am certain, as Dr. De Eds has just pointed out, and as you are far better aware than I, because of your vast and long interest in the subject of the mechanism of carcinogenesis, and the study of carcinogenic process, that when a substance is a powerful carcinogen or it has unusual properties which are valuable to us in elucidating the scientific nature of cancer, then there will be a concentrated use of that substance as a tool. And I think that you are both right. But you are perhaps looking at it from a different viewpoint here.

Dr. STEWART. Is that offered as a compromise?

Dr. ZAVON. I am in full agreement with Dr. Darby's statement. This is absolutely correct.

Dr. KENSLER. It would seem to me that one of the problems here that hasn't been mentioned is where the particular dose lies in terms of the dose response curve to this compound. And that the probability of getting a wrong answer will differ, depending on where you are on this dose response curve. If this is a very steep curve, and—then you would expect big differences in incidence as a result of small errors in the administered concentration. If it is a nonsteep curve——

Dr. ZAVON. Will you explain what "steep curve" means?

Dr. KENSLER. By "steep curve" I mean where you get a rapid change in incidence of response with a small change in dose of the material you are administering. In this sort of a situation, you could expect marked variations in incidence within a population, because you have a very steep dose response curve.

If you have a flat dose response curve, then changes in this direction will not be as apt to occur in any single experiment. This applies to any test of drug activity, be it for carcinogenesis or something else.

Dr. DARBY. Dr. Blum has been asking for the floor. I think he has a pertinent comment. Dr. Blum.

Dr. BLUM. I simply would like to point out that I am perfectly in agreement with Dr. Zavon that we need more careful measurements, and we need our evidence more completely presented, as is not always the case in the literature.

However, each problem that one solves statistically is a different problem in this field. What I was worried about in putting my question was a statement which might be taken as a blanket statement for all cases.

I would like to give you an example.

In the case of ultraviolet carcinogenesis, one has a very nice distribution curve, the kind of curve we are all acquainted with. In this case plotting the logarithm of the time to cancer appearance gives a normal curve which does not change its shape with the dose of the carcinogen. It simply moves along, on the time scale.

If, on the other hand, we work with chemical carcinogens, we find that the shape and slope of this curve does change. And I believe this is quite to be expected from the data, or from what we know about the process. Now, if you are going to do statistics, this becomes a more difficult problem, because you have different statistics for each dose level, and your dose response curve will be quite different if you work, say, at 50 percent incidence, or if you work at 10 percent incidence, or 80 percent incidence. So that one has to be careful in what one means by a dose response curve, because it has to be based on some kind of a statistical evaluation. And I believe that we will have to have a little more theoretical knowledge of this before we can get practical answers.

Dr. LEVIN. I think for the record it would be well to point out there are two types of error in this kind of situation recognized, known as type 1 error and type 2 error. Type 1 error is the error involved in assuming that a given difference is real when in fact it is not real. In other words, in this case, assuming that a substance actually does produce cancer, when actually it does not. This is a chance variation. That is type 1 error. The other type error is the opposite error. That

is the error of assuming there is no difference when there is a difference. And this, of course, can occur also on the basis of chance.

Now, which error you make larger depends, of course, on the importance of of the two decisions. I think that everyone will agree that if the decision involves admitting a carcinogen to the human food supply, or keeping it out. we would want to maximize the type 2 error. In other words, we want to make it as unlikely as possible that we will admit a carcinogen.

Now, with respect to the type 2 error, I would like to point out that if the true incidence, in other words, the true effect of a substance, were 3 percent, then there is a 5-percent chance of finding zero in samples of a hundred. And this is a more important area than the type 1 error to which you have been referring, Dr. Zavon, and this is the point I think we wanted to make in our report—that in a matter of this type of significance, where the alternatives were admitting a cancer compound or not, it is the type 2 error that should be given the greatest evaluation, and not the type 1 error.

You have been talking about the type 1 error, and the error of saying a compound is carcinogenic when in fact it is not, which would mean we would exclude a useful compound. We have pointed out that the more important error is the type 2 error, which would mean, if we made it, we would include a carcinogenic compound.

Dr. ZAVON. I would like to refer back to Dr. Stewart, so he can complete, before going into this area again.

Dr. KENSLER. I would like to comment that as I listened to what Dr. Blum said, that I had the impression he was talking about a time incidence curve, rather than what pharmacologists call a dose response curve. Is that right?

Dr. BLUM. Yes and no. The dose response curve of the pharmacologist must in this case—must be dependent upon the time incidence curve.

Dr. KENSLER. You would have to take an end point, 2 years, 1 year, or something, and you calculate your dose response curve in terms of your end point which you select, as a function of dose.

Dr. BLUM. The end point in the cancer study is the volume of a detectable tumor. And the time at which you arrive at this volume is your measurement. Now, no matter how you make the measurement, this is what you are measuring.

Dr. KENSLER. Providing you use the same time to evaluate all doses. Then you get a dose response curve.

Dr. BLUM. Oh, no. Then you get something which I think may be fictitious and uninterpretable.

Dr. KENSLER. I disagree with Dr. Blum.

Dr. DARBY. I think perhaps we should move on. This is a technical disagreement at a level which perhaps doesn't directly pertain to the question before us.

Dr. STEWART. Well, I just want to make one other point. When we are talking about a safe dose of carcinogen and extrapolating from a safe dose in animals to a safe dose in human beings, we are really not talking about one carcinogen; but we are talking about many, maybe 1,000, maybe 2,000 carcinogens, I don't know. The Food and Drug Administration in this country, and I think the British have come up with some sort of a statement that there are somewhere be-

tween 900 and 1,000 substances added to food. So when we are talking about adding carcinogens in low doses to food, we are not talking about one carcinogen, but we are perhaps talking in terms of hundreds or even thousands. And I think that is a point that is wise to bear in mind when we are talking about safe doses of carcinogens to be added to food.

I yield now, Mr. Chairman.

Dr. DARBY. Thank you, Dr. Stewart. I certainly think that you and I are both against cancer.

Dr. STEWART. I knew we could agree. You would have to come around to my point of view.

Dr. KENSLER. I would like to comment on one of Dr. Stewart's earlier remarks this morning when he mentioned that it was his impression that during the discussion yesterday, that the results obtained with sodium chloride solutions injected and sugar solutions injected were used as reasons for throwing out the Delaney amendment. Now I don't think they were at all. The issues where the Delaney amendment is involved is where a compound produces cancer by ingestion, and in the instances which were mentioned, the emulsifier, bladder stones, bladder cancer, the selenium, and so on, not sodium chloride or glutens.

Dr. STEWART. I must say I have to defend myself against this. With this surface acting agent, with this substance that causes bladder cancer, you are actually recommending the addition of a substance that causes bladder cancer in animals to human food. And with that I disagree, of course.

Dr. KENSLER. Sir, we went through this yesterday. I am not recommending this. I am recommending that legislation permit competent expert judging as to whether this should or should not be admitted in any amount into the food. I am not recommending that it be admitted. And this judgment is prevented under the present clause.

Dr. MIDER. Mr. Chairman, it would appear that some of my colleagues are interpreting the Delaney clause to mean that nothing may be introduced into the food supply or used in drugs or cosmetics which produces cancer by any form of test. I have not so interpreted that clause. Perhaps I am in error.

It seems to me that we have two large classes of materials that we have been talking about. One is the compound that is new to human experience, and has been found to produce cancer by adequate tests appropriately designed in experimental animals. However, a considerable amount of our discussion has centered about materials, chemical compounds, that we have known about for a long time. The selenium problem, for example. We have known a lot about selenium, but our information has improved materially in the past.

I doubt that it was the intent of the Delaney clause to prevent the correction of a nutritional deficiency. In that regard, I would call to your attention the change in the act proposed by the Secretary of Health, Education, and Welfare, which as I recall it, would permit the feeding of a compound to an animal, providing—even though it were carcinogenic, providing it did not produce a residue in the meat after slaughter, or in any byproducts from the animal during its life which were to be used for human consumption.

I think that Dr. Darby made a very significant statement this morning when he said that our ignorance requires protection from minimal exposures.

I think that we do require that protection. For example, among the carcinogens that are known, there are a few chemicals which will produce cancer from a single dose. There are others which will produce it from a dose that can be determined, and once that dose has been given, even though administration of the compound be stopped, the risk of cancer is still there, and the animals do in fact develop cancer.

We also have some compounds which must apparently be administered until the cancer appears, and if we stop before the cancer appears, we may not get any cancer.

It has also been said that in this legislation pending before your committee, it would be appropriate that the test for carcinogenicity include feeding. And I would suggest that if the compound is to be used in cosmetics, it would also be appropriate for it to be painted on the skin. I do not believe we have sufficient experience at this time to make the judgments which some of my colleagues on this committee are willing to make. Under those circumstances, I believe that the interest of the public is best protected by the Delaney clause or some modification thereof.

I am not entirely familiar with the way in which the Food and Drug Administration conducts its business. I am aware, however, that they seek consultation on many knotty problems that confront them, not only from Government scientists, but from scientists throughout the United States.

I believe that they administer this law well. And I would not object to any advisory committee, but I would point out, that if we want to look at each one of these cases and judge each one on its own merit, it would be very difficult to form one committee of specialists that could look at all the multiple problems relating to cancer that are likely to be brought up before the Food and Drug Administration.

Thank you, sir.

The CHAIRMAN. Mr. Rogers wanted to ask a question on that point, if you don't mind.

Mr. ROGERS of Florida. I would appreciate it, Mr. Chairman, if the committee could discuss this phase of this problem, and it is this.

As I understand it, from the definition, a carcinogen is a substance or chemical that will—forms cancer. It is cancer forming.

Now what I cannot clear up in my mind from the discussion thus far is how we determine what is a carcinogen, what it tests. Is there agreement on a test? Is there a standard for testing?

And until, it seems to me, there is some set form for testing, there is no telling what is or what is not a carcinogen, as far as we are concerned or the public is concerned.

Now, if you are going to give doses of, say, 40 percent or 10 percent, if there is no way of testing, how can we tell really what a carcinogen is, and how can we legislate, unless we have some understanding of the very basic problem of determining what it is?

Now I wondered if the panel could develop for us what you do use as testing, and what is a standard, or if there isn't any, how can the problem ever be solved. It would be helpful to me, and I hope to the committee, to have something developed along that line.

Dr. DARBY. Mr. Rogers, we discussed this at one point. I would suggest that this is discussed in considerable detail in this publication of the Food Protection Committee.

However, very briefly, to illustrate the judgment required, may I review the following. When one asks whether cancer is produced and puts this question to the animal—will administration of this produce cancer?—then your answer will depend on the animal which you use, the dosage level, the nature of the compound, the route of administration, how long you administer the compound, and so on. There is not complete agreement in every detail of the method of study. But there is, I think, a large area of agreement that you would use a rodent species and a nonrodent species, and you would administer the substance at a variety of levels, with a sufficient number of animals that you would reduce to the minimum practical errors—experimental errors which have been discussed as inherent in experimental design.

Now I think that our disagreement here is to a considerable extent in whether, then, if you administer something subcutaneously, and you find a reaction which is cancer, whether this substance is termed a carcinogen. We are really interested in the utilization of this substance by another route of administration, an oral route of administration. I think that if you got clear evidence of carcinogenic activity, most of us would say, "Yes, this is a carcinogen," even if it were by subcutaneous, or painting on the skin.

However, if the effect of this subcutaneous injection appeared to be that sort of effect which Dr. Stewart was referring to this morning for sodium chloride, an effect probably not inherent in sodium chloride itself, there is room for debate. When one says not a property of the sodium chloride itself it is perhaps puzzling. But it is probably the hypertonic solution being repeatedly injected subcutaneously, and the constant irritation of this that is responsible for the injury—not necessarily a property of this compound itself. Then judgment would tell me that—just as I believe Dr. Stewart——

Dr. STEWART. Hold on now.

Dr. DARBY. My judgment would be that this is not a carcinogen in practical terms.

Mr. ROGERS of Florida. Now may I say this: Dr. Stewart might say it is.

Dr. DARBY. Yes, he might very well.

Mr. ROGERS of Florida. And so we don't have any basis of determining yet what is a carcinogen.

Mr. DINGELL. If the gentleman will yield. I think we ought to ask Dr. Stewart that.

Dr. STEWART. Finally I have a chance to speak here.

Let me put it this way: The important thing about the Delaney clause that is emphasized is that the substance that is suspected should be fed. I think that is a good idea. It is written right in the law.

Mr. ROGERS of Florida. To write it into the law, you say?

Dr. STEWART. It is written in the proposed amendment, as I have read it in the letter that Representative Harris sent to me.

Now, then, I can name a carcinogen, beryllium, one of the most potent carcinogens as we know. So far as I know, and I may be mistaken, I don't think that has ever been tested by feeding. If I am

wrong, I hope I will be corrected. But if it is injected intravenously into rabbits, it produces bone sarcomas in multiple bones of that animal, and if it is inhaled by rats, it produces multiple lung cancers all through the lungs.

Now that is an example of a carcinogen shown to be a highly potent carcinogen by inhalation and by intravenous injection but to my knowledge not by feeding. I would say that substance should not be added to food. And I would like to see the Delaney amendment broad enough, which it is now, to include subcutaneous injection, painting, intravenous injection, inhalation, the administration of suspected carcinogens to pregnant animals and to lactating animals.

Suppose you come up with an agent which you feed repeatedly and it does not produce cancer in an animal, but by painting and subcutaneous injection you get 100 percent cancers in those animals, I wouldn't add that substance to food, even though it does not produce cancer in animals that ingest it.

Now that is my point, Representative Rogers.

The CHAIRMAN. Doctor, on that point, the important thing is that whoever proposes to use such substance has got to show positively, under the Delaney clause, that the additive is found not to induce cancer.

Now many have brought to our attention the statement that they know that such additive does not induce cancer, but they are unable scientifically to prove it.

Now I agree with you that the Delaney clause does what you said it would do. But, as has been developed during this panel discussion, there is no way of showing positively the effect of the use of the additive. How we overcome that is a problem.

Mr. SPRINGER. I think that is the crux of this whole thing we are talking about. That is, what you are doing by this amendment—that is what this committee wants to know about—is where you are putting the burden of proof. The burden of proof is not upon the Department down here. It is upon these people to show that this is not dangerous. In effect, that is what they are saying—just to put this on the record broadly.

Now the question is, Do you people have anything by which you can make a standard of proof and convince the administration down here, whoever is administering the law, that that is not dangerous?

The CHAIRMAN. If the gentleman will permit, that was very clearly developed here yesterday. Some contend that it takes not only a year or 2 years or 3 years to test certain additives, but that it would take 7 years to develop the data on which to make a finding. And that seems to be the dilemma. I would say the gentleman from Florida put his finger on the point. Dr. Stewart brought it up to right where we come into this picture.

I agree with what you said up to a point. But when it gets to that point where the burden of proof is, then the Department locks everybody out, because there is no known way to prove it.

Mr. SPRINGER. Would the gentleman yield? May I say this is not new to this committee. For 8 years we have been working with pesticides, and that is a field which has been tremendously developed. Even as long as they have been working on pesticides, there are pesti-

cides that they are unable to prove to the satisfaction of the Department are safe.

Mr. DINGELL. Which department is that?

Mr. SPRINGER. Food and Drug.

Mr. DINGELL. I beg to differ, because that particular amendment is administered by the Department of Agriculture.

Mr. SPRINGER. There has been an amendment to transfer it. But put it either way. This, it seems to me, is a far more nebulous proposition. I am not saying it is right or wrong, the amendment. I am just saying that is the problem with which this committee is faced. But we are making an impossible situation for the people administering the law.

The CHAIRMAN. Now, gentlemen, we would like to get the most out of this discussion in the time we have. I wonder if it might not be advisable, in the 30 minutes left, to give each one of you an opportunity to summarize. Would that procedure be agreeable, Doctor?

Dr. DARBY. Certainly.

Mr. YOUNGER. Mr. Chairman, we all recognize that there is a matter of judgment as to whether the compound, by experiment, is going to be carcinogenic—that judgment rests now with the Food and Drug as to the experiment. Will each of the witnesses state whether or not after that judgment the Pure Food and Drug should be allowed to set tolerances; I think they should say, as you go around, yes or no on that question, so that we have a poll of the panel on that one question.

The CHAIRMAN. Well, several of them expressed their views on that yesterday afternoon. It is all in the record.

Mr. YOUNGER. I was here. But they have not said definitely yes or no on that question. Our question is color additive. Most of the conversation has been on food additives.

Now, the bill that is before us is not solely restricted. We are debating today a bill on color additives for food, drugs, and cosmetics. Whatever your judgment is, you are going to have to determine as to whether your statement applies to cosmetics and drugs. And I think we have already passed the food additive, and that is on the books. We are talking about color additves today. And I think we ought to confine our remarks to that.

Mr. GLENN. Mr. Chairman, may I have one comment from Dr. Stewart as to something that was said yesterday, and which follows through on the discussion which we just had, as to pesticides.

I think that you said that the use of DDT has been shown to have some effect on animals in the way of cancer producing.

Now, last night I was thinking of that, and I recalled that we had previous hearings, and I have here a question and an answer by Mr. Larrick, Commissioner of Food and Drugs, and I would like to have you comment. The question was this:

> On the evidence presently available, do you regard DDT cancer-producing chemicals when fed to animals?

The answer was: "No."

Now, can you comment on that?

Dr. STEWART. I would be glad to comment on that.

After my testimony yesterday, I talked to Dr. Nelson, of the Food and Drug Administration, who is in the audience today. I based my

answer on a paper published by Dr. Nelson some years ago—I have the reference right here—in which he got some liver tumors in rats fed DDT. And this is in the literature—DDT—as being a carcinogen for animals.

Now, Dr. Nelson told me yesterday, and I don't want to put words in his mouth, I think he ought to speak for himself—but my impression of what he told me yesterday was that after he had gone over all his material, he didn't think DDT was a carcinogen, but that it was a weak tumorigen. Now, that is about what I got from Dr. Nelson yesterday. And he is here, and I am sure he can speak for himself.

Mr. GLENN. Thank you.

Dr. DARBY. Would you like for us to proceed?

The CHAIRMAN. Yes.

Dr. MIDER. Mr. Chairman, I think the panel could agree, within a reasonably short time, on an appropriate series of tests for any chemical compound that was presented to it. If we had three or four compounds, we might not come up with the same tests. But given the structure of a compound, some knowledge of its solubility, some of its general toxicological properties, I think we would have little difficulty getting substantial agreement on testing procedures.

Mr. YOUNGER. How about the other question?

Dr. MIDER. You want me to start that?

Mr. YOUNGER. Yes, I think each one of you ought to say whether or not you believe that the Pure Food and Drug should have any right or power to set tolerance.

The CHAIRMAN. Well, I think the gentlemen should be given leeway if they are not in a position to assert that.

Mr. YOUNGER. Well, that is all right. At least, they ought to address themselves to it.

Dr. MIDER. At the present time, Mr. Chairman, I would prefer that the Food and Drug Administration not have that responsibility, until we have additional information. I do not hold that this is a decision that is binding forever. But as we acquire more experience, I think we should reexamine the question.

Dr. DARBY. Dr. Stewart, would you like to speak to this?

Dr. STEWART. I don't believe it is possible to set tolerances for carcinogens to be added to food at the present time, or cosmetics.

Dr. KENSLER. In my opinion, the Delaney clause, as written, prevents the application of proper scientific judgment to this problem. In my opinion, it should be modified in such a way that the current scientific judgment be brought to bear on the problem whenever such judgments are appropriate, and when such information is available, not necessarily having to wait for the passage of another piece of legislation.

Dr. DARBY. Do you wish to speak to the tolerance question?

Dr. KENSLER. In terms of the tolerance question, I think that there is no final answer that can be given to this, except possibly in the exceptional case where compounds have been found by one test or another to produce an effect in what might be considered unreasonable concentrations. And I think we have an example of physical factors, of course, which can do this.

Dr. CANNON. I find a little difficulty in answering that question specifically. I think it has been brought out very clearly that the

only disagreement among the panel members with reference to the Delaney clause is the question of modification in terms of permitting the exercise of judgment.

I think your specific question, Mr. Younger, was: Do we think the Food and Drug Administration should set tolerances for carcinogens? Is that the question?

Mr. YOUNGER. Yes.

Dr. CANNON. I think all of us who have had experience with members of the Food and Drug Administration have great confidence in their ability. I would say, also, that they have never been reticent about going afield to get help in any of these technical matters. I assume, furthermore, that there is nothing in this bill to prevent that, inasmuch as it has been brought out, for instance, in the Senate bill, that the clause is not there, and it is assumed, nevertheless, that they have the power of adequate enforcement anyway. So I see no hazard whatever in entrusting the decisons to the Food and Drug Department.

I would like to say one other thing, though. You all, as lawyers, are familiar with the problem of legislative disagreement in matters of judgment. But you have a Supreme Court that you can carry things to, even though you may get a five to four decision. We have no court to appeal to except the scientific judgment of our peers. You are seeing illustrated today the way in which we arrive at judgments. Sometimes it may take 50 years.

It is a little surprising to me that there is so much concern about the possibility that a matter of judgment is precluded by legislation. I am sure that the members of the committee would not accept the conclusion that your proposed bill denies the exercise of judgment. Nevertheless, that is the only point of disagreement that has been brought up by us with reference to the Delaney clause, and it is only the question of scientific judgment which we have been talking about.

Does that answer your question?

Mr. YOUNGER. Yes.

Dr. BLUM. Mr. Younger remarked and used the term "set tolerances." And I find this is a rather difficult thing to define. If you mean by this tolerance levels which are going to be accepted, then I think this is a procedure that has to be taken—considered very carefully, because we may set a limit on the basis of some test, and under any circumstances it becomes a pretty arbitrary limit, and it should not be taken too seriously, because it may have to be revised up or down, probably down, as in the case—we have seen this happen with radiation limits over and over again, within the last 20 years.

On the other hand, we are setting a tolerance limit in one way or another if we forbid the use of a compound. And it seems to me that this is clearly a question which requires consideration from a number of points of view, including the question of whether the substance is really necessary, as an additive—I mean what is the value of it to the public in general—and these are problems for which I see no exact answer at the present time.

And I think we must put the judgement in the hands of someone. As far as I am concerned, the Food and Drug group is qualified as anyone I know.

Mr. ROGERS of Florida. Mr. Chairman, I just want to ask whether it is possible for the panel just to say whether they feel the Delaney amendment should be modified some to allow for greater scientific judgment.

Dr. BLUM. I would say that I see no—I think the Delaney amendment, or a similar amendment, is necessary. But I see no particular reason for modification. It seems to me to cover the situation.

Dr. DE EDS. In the first place, let me say that I know the personnel of the Food and Drug Administration, and I have confidence in their ability. Nevertheless, they, like everybody else, are human beings. There may arise special occasions when they would desire to have consultation with people on the outside. I realize that they actually do this. Nevertheless, the mere fact that we are all here indicates that there is a decided feeling that cancer is a particularly important subjcet, and I, therefore, think that it would be advisable to have a specific requirement in the act to the effect that whenever the toxicological data suggest carcinogenic properties, that then the Food and Drug would have their decision supplemented, if they so desired, by experts in the field of cancer. This is particularly true, I think, in certain borderline cases. I made no mention yesterday of the fact that we studied a compound, thioactamide, which would have been useful on Florida oranges for the prevention of rot at the stem of the orange. We discovered that this compound produces an enlargement of the nuclei of the liver cells, and that it was a potentialy dangerous substance. We never even consulted the Food and Drug about this. We reported the facts to the Bureau of Plant Industry, and suggested that this would not be a safe compound. I think that the investigators themselves who study the compounds are in many instances going to recognize that a compound per se is carcinogenic, and that is that. But, at the same time, they will be confronted with certain instances where it is not so clearcut, particularly where, as has been pointed out in the discussions yesterday, we are dealing with a situation where the compound is not necessarily carcinogenic per se, but can indirectly result in cancer because of metabolic products resulting from unusually high dietary levels which would never be encountered under practical conditions of usage.

This is an entirely different situation, and this is where, I think that there is a need for the exercise of scientific judgment.

Mr. DINGELL. As a matter of fact, Doctor, the Food and Drug now does consult with industry, and they have consulted with you on many problems?

Dr. DE EDS. That is correct.

Mr. DINGELL. And they have gone afield to seek scientific judgments of reputable people in the scientific brotherhood, as to whether or not these things are in fact carcinogenic, isn't that a fact?

Dr. DE EDS. That is right.

Mr. DINGELL. So there is really no requirement for additional authority for them to go and seek this scientific information, since they are presently consulting with members of the scientific brotherhood on many points?

Dr. DE EDS. That is right. I do not deny that, Mr. Dingell. It is because of the special importance that attaches to the subject of cancer, I think there is a definite, let us say, psychological value, in having in

the legislation a specific requirement. I think this is something that will be appreciated by the public.

Dr. DARBY. Do you wish to speak to the question of tolerance?

Dr. DE EDS. I think that the question of tolerance is of much greater importance in connection with these situations that are borderline. A compound like acetylaminofluorene, or like the thioacetamide, which we didn't even refer to the Food and Drug, I wouldn't even consider for a moment that there should be a tolerance there. But in these borderline cases, particularly where there is some evidence that the carcinogenic action is an indirect mechanism and not due to the compound per se, and present only when these unrealistic high dosages are required to demonstrate the carcinogenic action, that this is where it is reasonable to set a tolerance limit.

Dr. LEVIN. Mr. Chairman, I should like to say that after listening to the testimony of this panel, and considering it as carefully as I can, I feel that the principle of the Delaney amendment should be retained in the public interest. I feel, also, that as a principle, it would be undesirable to allow tolerances for recognized carginogens as a principle. I do recognize the possibility of exceptional instance to which we might want to make an exception to that rule. And if a workable arrangement could be devised which would allow for an exceptional review of such exceptional instances, I would be in favor of that. But if the alternative is to keep tolerances or not to keep tolerances, I would be entirely in favor of refusing tolerances to carcinogens in the language of the amendment as it now stands.

It is my understanding that there is ample authority for the Food and Drug Administration to seek scientific review of scientific questions, and that they make full use of this authority. In fact, there is no need to modify the amendment accordingly. If that is not correct, I would favor such a modification as would make it mandatory upon the Food and Drug Administration to seek scientific review of scientific problems.

The CHAIRMAN. Well, would you go further? If they sought such review and judgment could they use that in accordance with whatever judgment they received? Would you go that far?

Dr. LEVIN. Yes; if there is an exceptional instance in which there is good reason to think there should be an exception made to the principle of tolerance for a substance suspected of being carcinogenic, then I think that the judgment of a special board of scientists should be permitted to prevail.

Mr. AVERY. Doctor, what would be the difference between an exception and setting up a tolerance?

Dr. LEVIN. As I understand the question which is asked is whether we should permit the Food and Drug Administration to exercise its own judgment in the ordinary course of events on the basis of evidence submitted to it—whether it should set a tolerance. And this I do not favor.

Mr. AVERY. That you do not favor. But you went on to say you thought there should be certain exceptions.

Dr. LEVIN. If there is an exceptional instance, in which the public interest is at stake, and this can be shown——

Mr. AVERY. Then they should set tolerance?

Dr. LEVIN. Then they should call in a special scientific board of review to review the adequacy of their contention that there is a special situation which calls for a tolerance.

Mr. AVERY. All right, that is what I wanted to wrap up. Thank you.

Dr. MILLER. We have seen unusual situations have occurred where the carcinogenic hazards from the use of a substance are at serious dispute on scientific grounds. Therefore, I feel the law should direct the Secretary to seek the opinion of a board of experts when such a dispute arises with the petitioner. The final decision must be made by the Secretary, and he should be directed to publish without delay the evidence upon which this decision was made.

Dr. TANNENBAUM. It is my opinion that the Delaney clause should be retained, but that it should include provisions for review of Food and Drug Administration decisions on exceptional controversial problems. In these instances the specific problem, and experimental conditions and findings, should be reviewed with regard to their bearing on the probability of hazard, by a qualified panel. Only for special borderline problems should the Food and Drug Administration give consideration to tolerances.

Dr. ZAVON. By chance, I assume the spectrum of opinion goes from Dr. Stewart to myself. Just as Dr. Stewart has stuck his neck out, I will stick mine out again.

On page 8 of House bill 7624, line 15 and thereon, there is, in my opinion, ample basis for any regulations which the Secretary wishes to promulgate for the protection of the public. Therefore, I wou'd be in favor of eliminating what to me—and I have had some experience in writing legislation—what to me is a redundant and unnecessary phrase or portion of the legislation, and tends to highlight the current hysteria regarding cancer.

If, for reasons not scientific reasons, but if for other reasons it is impossible to eliminate this clause, I would suggest its modification, and would suggest at the very least the elimination on page 10 of portions of lines 11, 12, 13, and 14, up to and including the word "or." The remainder of it would, of course, have to be rewritten somewhat. But the first phrase which, as was brought out yesterday—no one is willing to interpret for me, should indicate that it does not preclude the operation of all subsequent phraseology.

Third, I must say that I am in almost complete agreement with Dr. De Ed's statement. I was very sorry that no one took up my challenge in my statement yesterday that we are now setting tolerances for carcinogens, that we do this on the basis of scientific judgment, on the basis of the evaluation of a panel of experts. We have set tolerances, maximum allowable limits for radioactive materials in drinking water and other ingestibles. And, therefore, I conclude that we can set tolerances.

I agree with Dr. Mider's last statement, but I wonder whether this panel, or any other panel, could agree on the dosage level at which we must test these materials if we are agreed on the experimental design other than dosage level.

I think this is a very important point which this panel, and probably no other panel, will fully agree on.

56123—60——32

Furthermore, I would say that health is a broader concept than just cancer protection. I would point out to you, in connection with DDT, and many other materials, if research in color additives or food additives or any other area that we are discussing is brought to a halt, or significantly impaired in this country, it means that one of the major areas of such research in the free world will be eliminated, and that the development of materials which might significantly benefit the world at large in extending its inadequate food supply may be seriously jeopardized. I think at the present time this is a very important point in determining our entire future.

Thank you.

Dr. DARBY. Mr. Harris, I will attempt to summarize my own feeling about this. I think I have already done so. But, very briefly, I am of the opinion that the section—paragraph on page 10, beginning line 11 to 22, is really unnecessary in order to provide the authority for protection of the public health in this bill. I believe that that portion referred to by Dr. Zavon, and then the portion beginning on line 16, page 11, adequately give the Secretary the authority to review and evaluate data before him, and should evidence presented fail to show that it would be safe and otherwise permissible to list a color additive for all purposes proposed, and so forth, that he may do so. If it were unsafe, he would not do so.

I believe that it would be impractical to adopt the suggestion which has been made this morning that you make exceptions in the law to certain substances (sugar, salt), because repeatedly, as science progresses, it will be necessary to add to this list of exceptions and have additional legislative action. Accordingly, I would prefer to trust the scientific judgment of a responsible agency, such as the Food and Drug Administration, rather than having a firmly predetermined legislated decision. Any decision so legislated, as I am sure this panel has illustrated—would be legislated with a certain lack of the desired scientific knowledge.

Finally, one point has not previously been mentioned. It is late, but I really feel obligated to call attention to it. On page 10, line 13, of the bill the statement is made—

> If ingestion of all or any part of such additives is found to induce cancer.

This certainly is subject to a considerable amount of scientific question, because it is conceivable that an additive would have one portion which is a nonnutrient, another portion which might be a perfectly harmless nutrient. This statement could legally be interpreted, I believe, as preventing the addition of even a portion of an additive which is perfectly harmless.

As far as tolerances are concerned, I feel, again, that in those exceptional situations, such as I interpret Dr. Levin to have indicated, that we should permit tolerances, and that those tolerances should be based on the best judgments, the best appraisals, which could be afforded, the best advice which can be afforded to the Secretary. And this would be the advice which he could get from his scientists in Food and Drug, from other scientists that he might wish to call in. And I should like to see that this includes the possibility of calling in scientists from outside of the Government agencies through such body as the National Academy of Sciences.

In closing, I should like very much to thank you and the committee, for the panel, for your very kindly and patient handling of us in our moments of controversy. I can assure you that there has been in these controversial moments nothing but scientific differences. This is a panel, each member of which has great respect for the others. Everybody—except they don't have much respect for the chairman.

The CHAIRMAN. Which chairman are you talking about?

Dr. DARBY. The chairman of the panel, sir. We all have great respect for the chairman of the committee.

The CHAIRMAN. Gentlemen of the panel, let me say that the hour of 12 has arrived. We will have to conclude this very helpful and highly instructive and beneficial discussion.

On behalf of the committee, let me thank each one of your for your willingness to come here and discuss with the committee these problems that are so disturbing.

I personally have gotten a great deal out of it. One fact that I have learned is that outstanding and distinguished scientists can very definitely draw lines and disagree. I also can understand how, with the knowledge and the experience and background that you have, you can contribute to the welfare of the public.

Each one of you can certainly be justified in feeling that you have made such a contribution.

I am not sure whether I will ask the Secretary of HEW to come back and try to unravel and analyze what you have put into this record. I am sure that it will not only be helpful to this committee as it strives for a resolution of this problem, but it will also be helpful to the Department, the Food and Drug Administration, and the Agriculture Department as well, as they continue to administer these important laws in the interest of the public.

Thank you very much for the 2 days that you have given of your time and of your knowledge to this record.

I wish there were some other way in which the committee could show its respect and appreciation for you taking the time to come here and give us the benefit of your knowledge and information.

The committee will now adjourn.

(The following letter was later received from Dr. Darby:)

VANDERBILT UNIVERSITY,
SCHOOL OF MEDICINE,
Nashville, Tenn., April 25, 1960.

Representative OREN HARRIS,
Committee on Interstate and Foreign Commerce, House of Representatives, Congress of the United States, Washington, D.C.

DEAR MR. HARRIS: I have had an opportunity to reread the transcript of the hearings on April 5–6, 1960, before the Committee on Interstate and Foreign Commerce on the subject of H.R. 7624, color additives amendment to the Food and Drug Act. This testimony was that of the panel of scientists selected by the National Academy of Sciences to discuss with the committee scientific information and knowledge pertaining to the possibility of establishment of safe tolerances for food and color additives known to induce cancer in man or in animals.

It is evident from the testimony that the panel of scientists agree that tests in animals can provide some useful basis for appraising the degree of hazard which may be associated with a given use of a substance. It is equally evident that such tests are not infallible and that scientific judgment must be the basis for decision as to the hazard or safety for use of any substance.

In the discussions of the panel much time and attention was given to the different interpretations of the word, carcinogenesis. It might have been more helpful to your committee had the panel addressed itself more to the question

of hazard from cancer as a result of use of a substance or degree of safety involved in the use of the substance. It is clear from reading of the testimony that when they spoke of carcinogenesis different members of the panel had in mind different degrees of certainty that a compound could produce cancer.

The evidence upon which judgment such as this is based includes a vast array of considerations, many of which were brought out in the testimony of the panel. Consideration of these factors and the interpretation of their significance is that element repeatedly referred to by the panel as scientific judgment. There seemed to be a unanimous opinion of the panel that scientific judgment must enter into a decision pertaining to the hazard which might be presented by the use of a given substance.

Some members of the panel felt that the evidence at present is such that one should limit or restrict by legislative action the type of evidence upon which one might make a scientific judgment. Others felt this limitation unwise. The record reveals that the type of evidence upon which scientific judgment has and is being based at present has undergone change and is likely in the future to undergo further change.

From the record sincere differences of opinion exist as to the degree of limitation imposed by the wording of the so-called Delaney clause. Some of the panel members arguing for the retention of the present wording of the Delaney clause appeared to feel that there was considerable restrictiveness of the clause and it was even suggested that certain legal exceptions be written into the clause to take cognizance of controversial evidence for some specific food substances (for example, evidence relative to common salt). This would seem most unwise because of the impossibility of identifying or predicting the exceptions which should be made in face of existing and future knowledge.

The occurrence of cancer is but one of many undesirable reactions which may be induced by a given material and which might be judged to render the use of a substance unsafe. Without the Delaney clause the Secretary of Health, Education, and Welfare is charged with the responsibility for decision as to the safety for use of a given substance.

It is my opinion that the legislative action should continue to charge the Secretary with this responsibility for decision as to safety for use of any proposed food additive, regardless of the kind of hazard. If it is deemed useful by the Congress to call especial attention to the potential hazard from cancer, I believe this could in the best interest of the health and welfare of our people be accomplished by the simple device of instructing the Secretary that in reaching a decision as to safety he is to consider evidence bearing upon the possible hazard from cancer which might result from the use of a given substance in the manner proposed.

Such charge would then assure that he take into account all evidence obtained by methods presently available or which might be developed in the future for judging the safety or hazard for use of a given substance, and that he not only could seek but, in fact, exercise the best scientific judgment in the administration of the law.

When a decision of the Secretary made on such a basis is appealed it would again be my considered judgment that a mechanism for review by a competent scientific group selected for the particular case at hand would be desirable.

Finally, legislative requirement of publication of the evidence considered in reaching judgments would greatly promote confidence on the part of the public and scientists as to the degree of protection and safety afforded by our food supply. At the present time evidence submitted other than at public hearings must be kept as confidential information by the Food and Drug Administration until it is released by those who have presented the evidence. Members of both panels from the National Academy of Sciences who have testified before your committee or its subcommittee on food additives legislation have urged a change in this requirement. I believe this desirable.

Sincerely yours,

WILLIAM J. DARBY.

(Whereupon, at 12 o'clock noon, the committee recessed, subject to the call of the Chair.)

COLOR ADDITIVES

MONDAY, MAY 9, 1960

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The committee met, pursuant to call, at 10 a.m., in room 1334, New House Office Building, Hon. Oren Harris (chairman of the committee) presiding.

Present: Representatives Oren Harris (presiding), William S. Mack, Dingell, Rogers of Texas, Bennett, Springer, Schenck, Younger, Avery, Nelsen, Keith, Hemphill, and Brock.

Also present: Dr. Arthur S. Flemming, Secretary of Health, Education and Welfare; Dr. G. Burroughs Mider, Associate Director in Charge of Research, National Cancer Institute; George P. Larrick, Commissioner, Food and Drug Administration; Theodore Ellenbogen, legislative attorney, Department of Health, Education, and Welfare; W. E. Williamson, chief clerk.

The CHAIRMAN. The committee will come to order.

The committee is meeting again today to resume hearings, and hopes to conclude the hearings today on color additives proposed legislation, H.R. 7624 and S. 2197.

It will be recalled that the committee conducted hearings on this subject some time ago. We are very glad to welcome again Dr. Arthur S. Flemming, Secretary of the Department of Health, Education, and Welfare, who will present a statement—should I say another statement—on this particular subject matter.

It will be recalled, also, that we held a panel discussion on April 5 and 6, at which time we heard a group of distinguished scientists discuss the scientific aspects of the legislation with particular emphasis on the Delaney clause.

When Dr. Flemming was here before, it was indicated then that he probably would have a subsequent report to make to the committee.

Mr. Clerk, I believe we have the report from the Bureau of the Budget, dated April 13, 1960, which I think should go in the record at this point.

(The report referred to appears on p. 34.)

The CHAIRMAN. Before we ask you to proceed, Dr. Flemming, I should like to take the occasion to welcome a distinguished and fine group of girls who are visiting with us today. I do not know if it is because they heard that you were coming here that brought them to visit. It could very well be. We have classes from various institutions throughout the country who visit this committee, and we are

always glad to welcome these groups here, because we feel that the work of this committee is of such importance that it would be very helpful to you during the course of your education. It indicates the interest that you have in the important problems of the day, because you are to be our citizens of tomorrow.

So it is a pleasure to welcome the senior class of the Academy of the New Church at Bryn Athyn, Pa.

May I say that we are very glad to have you with us. We appreciate your taking the time to visit this committee on your trip to Washington.

We, of course, hope you can stay as long as your time permits, and wish you the best on your trip to the Nation's Capital.

I observe that we have a supplemental letter from your Department, Mr. Secretary, under date of April 11, 1960, and also one dated April 18, 1960, and I have just been handed one that was sent to us April 21, 1960, transmitting comments on amendments proposed by nongovernmental witnesses.

I assume these are the comments you are going to give today?

Secretary FLEMMING. In substance, Mr. Chairman.

The CHAIRMAN. They can go in the record, if you like, or you can proceed.

Secretary FLEMMING. I would be very glad to have the letters go in the record at this point.

(The documents referred to are as follows:)

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
April 11, 1960.

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: The purpose of this letter is to recommend a correction in the hearing provision in title I of the proposed "Color Additive Amendments of 1959" (H.R. 7624 and S. 2197) now pending before your committee.

As drafted by this Department and submitted to Congress, and as contained in these bills, the hearing provision would, through an inadvertent cross-reference to the subsection on fees, provide for hearing and judicial review not only with respect to the issuance, amendment, or repeal of regulations relating to the listing and certification of color additives, but also with respect to regulations establishing fees for such listing and certification.

Under present law as consistently interpreted by us since its enactment, the issuance or amendment of regulations establishing schedules of fees for the listing and certification of coal-tar colors is not subject to hearing or judicial review (section 706 of Federal Food, Drug, and Cosmetic Act). This likewise holds true in the case of fees for certification services for insulin or antibiotics, fees for the pesticide regulation service, and fees for seafood inspection (sections 408(o), 506, 507, 702A). The establishment of such fees is purely a matter of cost accounting and, since the services must be self-sustaining, the fees are automatically kept at the appropriate level through auditing of expenditures by the General Accounting Office. To provide for hearing and judicial review with respect to the establishment of fees would thus serve no useful purpose and, on the other hand, might cause delay which could seriously impede or make impossible the performance of the services in question.

We therefore recommend that the provisions of these bills be corrected by changing the phrase "subsection (b) (c), or (e) of this section" (H.R. 7624, p. 13, line 6; S. 2197, p. 13, line 9) to read "subsection (b) or (c) of this section."

Sincerely yours,

ARTHUR S. FLEMMING, *Secretary.*

THE SECRETARY OF HEALTH, EDUCATION, AND WELFARE,
Washington, April 18, 1960.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Dr. Kenneth A. Freeman, in charge of the Color Certification Branch of the Food and Drug Administration, who attended the color additives hearings on February 10, has advised me of your request for a statement outlining the status of arsenic-containing compounds under the food additives amendment to the Federal Food, Drug, and Cosmetic Act.

Six arsenic-containing compounds are used in poultry feed to stimulate the growth of poultry or to control disease in the flocks. Certain of these compounds may be used also in swine feed for growth stimulation and disease. While the Department of Agriculture has the responsibility for inspection of meat and poultry at the point of slaughter, the Food and Drug Administration is responsible for the safety of new drugs for veterinary use and of feed for meat animals, and poultry.

Before the enactment of the food additives amendment, some of these arsenic-containing compounds were allowed in animal feed under the provisions of the new-drug and antibiotic sections of the Federal Food, Drug, and Cosmetic Act. The compounds were allowed in stated concentrations and with the understanding that they would be marketed with label directions requiring treated animals to be maintained for 5 days before slaughter on feed that does not contain added arsenic. The evidence before the Food and Drug Administration indicated that this 5-day withdrawal period would allow the elimination of added arsenic from tissues of the treated animals and thus would insure the safety of the use of the arsenic compounds.

A very preliminary survey made some time ago by the Food and Drug Administration indicated that some poultry raisers are not withholding arsenic-containing feeds from their flocks 5 days before slaughter, and we have information that in some parts of the country hog raisers maintain their animals on arsenic-containing feed within the 5-day period that the arsenic is supposed to be withheld. It is evident that such disregard of the directions for safe use could lead to added arsenic residues in poultry and pork on the retail market and thus could frustrate the public health safeguards upon which the original approvals were granted. It is our purpose to look into this situation further, but our investigation has been delayed pending a search in the laboratories of the Food and Drug Administration for suitable analytical methods to support the investigation.

In September 1958 the food additives amendment to the Federal Food, Drug, and Cosmetic Act became law. This provides, as you know, that a person who proposes to promote and additive for use in food must first present evidence of the safety of the use to our Department and secure approval through the issuance of an appropriate food additives regulation. It provides also that we may not sanction the addition of a substance to food if it has been found to induce cancer when fed to man or animal, or if it has been found to induce cancer by other appropriate tests. (Food, as defined in the law, includes food for animals as well as for man.)

The specific uses of arsenic-containing compounds on the basis of applications that were approved by the Food and Drug Administration under the new drug or antibiotic sections of the law before enactment of the food additives amendment are exempt from the application of the food additives amendment. Thus, many uses of arsenic-containing compounds in animal feeds may continue as before.

Whether other uses of these and other arsenic-containing compounds in animal feeds would be subject to the food additives amendment depends upon whether appropriately qualified experts generally recognize such uses as safe. If they do, then the chemicals are not included in the definition of food additives. There was some question in our minds as to whether these uses were generally recognized by experts as safe, and we brought this to the attention of the Animal Health Institute, Des Moines, Iowa, and the American Feed Manufacturers Association, Inc., in June and July 1959. It was our understanding that one or both of these organizations, perhaps with the assistance of some of the veterinary drug manufacturers whom they had contacted, would canvass a num-

ber of scientific experts in the country to determine whether the additional arsenicals were generally regarded as safe under their intended conditions of use. So far as we know, this has not been done. Consequently, it is our purpose in the near future to make such an investigation without waiting further for industry action.

If the proposed uses of the arsenicals in animal feeds are subject to the food additives amendment, then one part of the showing of safety that is required under the amendment will be to determine whether the cancer clause of the amendment applies. The Food and Drug Administration tells me that the organic arsenic compounds used in animal feeds have not been shown to produce cancer when fed to test animals. On the other hand, we do need more advice from the scientists who are most knowledgeable in the arsenical field. We are taking steps to get this advice.

As you know, from the testimony I gave before your committee on January 26 we expect to propose an amendment to the food additive law that would allow us to sanction the use of a chemical in animal feed, even though it may have been shown to produce cancer in test animals if the proposed use could leave no residues in edible products derived from the animal for which the feed was intended and were without harm to the animal itself. Such an amendment, together with the further studies that we are undertaking, may well resolve a number of questions that have arisen about the arsenic compounds since the food additives amendment was enacted about a year and a half ago.

Sincerely yours,

ARTHUR S. FLEMMING, *Secretary.*

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
Washington, D.C., April 21, 1960.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: On January 29, you indicated during the hearings on pending color additive legislation (H.R. 7624 and S. 2197) that you would like to have our views on the various amendments proposed by witnesses other than those representing this Department. Accordingly, we have reviewed the record of the hearings and are glad to offer the following comments.

The amendments proposed by the witnesses fall into four principal categories:

1. There are a number of suggestions for change in the scope of the bills.

2. There are several recommendations with respect to the substantive criteria for listing colors, including a number of adverse comments on the anticancer clause in the Department's proposal as contained in H.R. 7624. The criticisms of the bill's anticancer clause also extend to the clause from which it is derived, i.e., the so-called Delaney proviso in the Food Additives Amendment of 1958.

3. A number of suggestions are made on procedural points, both with respect to the permanent part (title I) and the transitional part (title II) of the bill.

Additionally, one individual, Mr. Frank Schell, of Florida, has written to the committee proposing an entirely new bill to be substituted for the Department's bill.

Our comments on these various items, except the anticancer clause are enclosed herewith (enclosure I). I expect to testify further on the anticancer clause. There is enclosed herewith (enclosure II) a draft of a provision which would accord an opportunity for hearing with respect to certain regulatory actions under the transitional part of the bill, under the conditions stated in my testimony. There is enclosed (enclosure III) a draft amendment to the proposed section 706(d) of the bills, to incorporate time limits in the rulemaking procedure of the legislation if the committee should wish to do so. Also there is enclosed (enclosure IV) a draft amendment to section 203(d)(2)(A) of the bill to make it clear that funds and regulations dealing with the cost of certifying coal-tar colors under section 706 of the basic act, shall continue to be available and in effect, respectively, for the purposes specfied in section 706 as amended by the proposed bill.

In summary, we are opposed to all the amendments proposed by the witnesses, except (1) a clarifying amendment on agricultural chemicals, in the form con-

tained in enclosure I agreed upon by us with the Department of Agriculture, and (2) the amendments set forth in enclosures II and III. As between the respective versions of S. 2197 and H.R. 7624, we have already advised that the changes contained in S. 2197 as passed by the Senate are acceptable to us, except that we recommend inclusion of the anticancer clause of H.R. 7624 with a modification relating to animal feed similar to the one we are developing for the Delaney proviso to the Food Additives Amendment of 1958. We have also recommended, by letter dated April 11, 1960, a technical correction in section 706(d).

Sincerely yours,

ARTHUR S. FLEMMING, *Secretary.*

The CHAIRMAN. I also observe that the committee has a report from the Department of Agriculture which will be included in the record.

(The report referred to appears on p. 35.)

The CHAIRMAN. I hope that we are getting somewhere toward resolving this very difficult and important issue. We are very glad to have you back with us, Mr. Secretary, and I believe you have a statement which you would like to present.

STATEMENT OF ARTHUR S. FLEMMING, SECRETARY, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Secretary FLEMMING. Mr. Chairman, thank you very much.

I am very happy to appear before the committee again and appreciate the courtesy that you have extended to me in giving me the opportunity of commenting on some of the testimony that has been presented to the committee since I appeared the last time.

As the members of the committee will recall, when I appeared before your committee on January 26 to discuss proposed legislation dealing with the use of colors in foods, drugs, and cosmetics, I particularly urged that the anticancer provision of the food additives amendment be included in any legislation to assure the safety of color additives.

In the intervening months you have heard the issue of the anticancer clause discussed further by a great many witnesses, including a panel of distinguished scientists. I appreciate, therefore, the opportunity which you have extended me to review the position of the Department of Health, Education, and Welfare on this issue in the light of the testimony which has been presented to you.

The panel discussed in considerable detail the scientific problems that confront us in connection with determination of the cancer-producing potential of chemicals. They pointed out the difficulties of designing and conducting an experiment to determine whether a substance is a cancer producer for man and the difficulties in evaluating the test data after it is obtained.

Scientists in our Department who were present during the panel discussion and who have since reviewed the transcript of the testimony tell me that the scientific views expressed by the panel and those expressed earlier by our Department are basically in accord.

The panel also gave you its views about the administrative procedures that could be employed in applying the accepted scientific principles in the cancer field. There is an area here in which we do not find it possible to agree with the recommendations of some of the scientists.

A number of the panel members have suggested that despite the difficulties, in extraordinary cases, our Department should have the authority to decide that a minute amount of a cancer-producing chemical may be added to man's food after a group of scientists sit down and consider all the facts and conclude that the quantity to be tolerated is probably without hazard.

The Department's position is that the proposed color additives legislation should include an anticancer clause that makes illegal the use of any color that will induce cancer when tested by appropriate methods.

We believe this position to be the only sound public policy in view of the fact that our experts tell us present scientific techniques do not permit them to state unequivocally how much or how little of a substance that induces cancer when administered to animals will induce cancer when administer to man.

This means, of course, that we would oppose any change in the Delaney anticancer clause of the food additives amendment other than the proposal I incorporated in my January 26 testimony.

At that time I stated that we believe the Delaney clause should be modified to provide that additives used in animal feed which leave no residue either in the animal after slaughter or in any food product obtained from the living animal be exempt from the provisions of the clause.

Let us look for a moment at the practical effect of the anticancer clause:

I believe it is significant that in all the testimony you have heard on the color additive bills since last January 26, no witness has given you a single example of a cancer-producing color additive that he thinks should be allowed. And no witness has stated what he would regard as an extraordinary situation that would justify approval of a cancer-producing color additive.

Certainly we know of no cancer-producing color additive that should be permitted, nor are we able to visualize a situation that would justify the addition of any amount of a carcinogenic color additive to foods, drugs, or cosmetics in the present state of our scientific knowledge.

Four chemicals, not color additives, were mentioned during the hearings as compounds that might be permitted in small amounts in food. I have here a supplemental statement prepared by the Food and Drug Administration commenting on these compounds and on certain other phases of the testimony you have heard on cancer.

It is a brief statement, Mr. Chairman, and I would be glad to go over that after I finsh my opening statement, which, as you will note, is short; or I would be glad to have the Food and Drug memorandum included in the record of the hearing, whichever you desire.

You will note from this statement that the Food and Drug Administration finds that not one of these four compounds has been established as a necessary ingredient in the diet of man.

I would like to state, however, that in my opinion the facts presented to your committee about these four componds, for which some people believe a small tolerance level could be established without great risk, do not add up to a compelling or even a persuasive argu-

ment for abandoning or weakening the principle of the anticancer clause.

The rallying point against the anticancer provision is the catch phrase that it takes away the scientist's right to exercise judgent. The issue this made is a false one, because the clause allows the exercise of all the judgment that can safely be exercised on the basis of our present knowledge. The clause is grounded on the scientific fact of life that no one, at this time, can tell us how to establish for man a safe tolerance for a cancer-producing agent.

Until cancer research makes a breakthrough at this point, there simply is no scientific basis on which judgment or discretion could be exercised in tolerating a small amount of a known carcinogenic color or food additive.

As I pointed out in my original testimony, the opposition to inclusion of an anticancer clause arises largely out of a misunderstanding of how this provision works. It allows the Department and its scientific people full discretion and judgment in deciding whether a substance has been shown to produce cancer when added to the diet of test animals. But once this decision is made, the limits of judgment have been reached and there is no reliable basis on which discretion could be exercised in determining a safe threshold does for the established carcinogen.

So long as the outstanding experts in the National Cancer Institute and the Food and Drug Administration tell us that they do not know how to establish with any assurance at all a safe dose in man's food for a cancer-producing substance, the principle in the anticancer clause is sound.

I want to emphasize the statement I made on January 26 that the Food, Drug, and Cosmetic Act, as it now stands, will be enforced to prohibit the addition of cancer-producing substances to food unless a law should be passed directing us to follow another course of action.

Even though we have this authority in the law, we urge the Congress to join with the executive branch to give added assurance to the consuming public by directing the anticancer clause in the proposed color-additives amendment.

Whenever a sound scientific basis is developed for the establishment of tolerances for carcinogens, we will request the Congress to give us that authority.

Again, we say, however, that we believe the issue is so important that the elected Representatives of the people should have the opportunity of examining the evidence and determining whether or not the authority should be granted.

As I have indicated, Mr. Chairman, there is attached another rather brief memorandum which is headed, "Comments on Testimony on the Cancer Clause in H.R. 7624." This was prepared for me by the Food and Drug Administration.

If you so desire, I would be glad to go through that now. It is brief. But, as I indicated earlier, I would also be very glad to simply make it available for the record.

The CHAIRMAN. You may proceed just as you like, Mr. Secretary.

Secretary FLEMMING. I think it would probably be helpful, because this is a brief memorandum—and, as I say, this memorandum was fur-

nished me by the Food and Drug Administration commenting on the testimony on the cancer clause.

Four specific compounds were mentioned during the hearings as substances for which safe tolerances might be established.

One was an emulsifier that produced bladder stones and cancer when included as 25 percent of the total diet, but did not produce stones and cancers when fed at a level of 10 percent of the total diet. Some witnesses criticized the test on the ground that the chemical was fed at too high a percentage of the total diet.

The level at which the emulsifier was tested was appropriate. This emulsifier was being used in bread. It was being added at one-half pound of emulsifier per 100 pounds of flour; allowing for other ingredients and moisture present in bread, this amounted to approximately 0.3 percent of the weight of the finished bread.

When the Food and Drug Administration learned that the product was being used, it started tests to determine its effect on laboratory animals.

In accordance with accepted pharmacological procedures, the chemical was tested at higher levels than were being employed in man's food. This is necessary because man does not always respond to added poisons in his diet exactly like test animals—a healthy man may be less sensitive or he may be more sensitive than the animals. It should be remembered, too, that food is consumed by the weak, the sick, and the aged, who may be much more sensitive than others.

Combining these sources of possible error in translating animal-test results to safe tolerances for man has led the Food and Drug Administration over the years to follow a policy of requiring a safety factor of 100 for new chemicals, foreign to man's food. That is, animals should show no adverse effect when they consume 100 times as much of a chemical as is proposed for man's diet.

Now let us apply this policy to the question of the validity of the test on the emulsifier. Had 25 percent of the emulsifier in the animals' diet been proved safe, this would have justified the assumption, applying the safety factor of 100, that 0.25 percent would be safe in man's diet. Bread contained as much as 0.3 percent of the emulsifier, and the 25-percent level did not prove safe for animals. Therefore, the amount fed is reasonably relevant to the safety question.

When you consider the fact that animals fed 25 percent of the emulsifier got cancers, we believe the decision that none of this chemical could be used in bread was proper.

Furthermore, what is the significance of this compound in food, drugs, or cosmetics?

There are a number of other emulsifying agents on the market today that can be used in place of this chemical. It is not essential for nutrition. It is not essential for the manufacture of food. It is not essential for the manufacture of drugs. It is not essential for the manufacture of cosmetics.

So why should the Government take action to allow this chemical to be used when there are other materials that will adequately perform the function it is supposed to accomplish and when these other materials have not been found to produce cancer upon feeding?

An industry lawyer suggested that it would be possible to establish a safe tolerance for potassium arsenite by determining a feeding level

at which it fails to produce the characteristic changes in palms of the hands and soles of the feet.

Why should we establish a tolerance for potassium arsenite which has been found to induce cancer when consumed by man? It is not used in food today. So far as we know, there is no technological purpose that its use would serve that cannot be served adequately by noncarcinogenic chemicals.

Another industry witness spoke in favor of allowing stilbestrol to be used in the production of poultry. We are advised that the use of stilbestrol was economically important in the production of about 1 percent of the total poultry supply of the country.

Its use yielded caponettes, birds quite similar to those produced after surgical castration, at less cost. But the use has been shown to leave residues in some edible tissues of the treated birds, and the chemical has produced cancers when fed to laboratory animals.

We do not know of scientific procedures that would permit us to determine how much or how little of a substance that produces cancer by feeding to test animals would be required to produce cancer when fed to man. In view of this, why should we take a risk with the public health, just to permit a very small segment of the poultry industry to use production methods somewhat cheaper than others already available?

Some witnesses addressed their comments to selenium, a chemical which some believe is an essential nutritional factor in young lambs and young calves. There has been no showing that the use of quantities of selenium needed for nutritional benefit would leave a residue of selenium in the meat of treated animals at time of slaughter.

I have testified that the Department would favor an amendment to the food-additives amendment exempting from coverage of the cancer clause substances to be used in animal feed which leave no residue either in the animal after slaughter or in any food product obtained from the living animal.

Moreover, I have stated that if a situation should develop which in the public interest would indicate the need for further modification of the anticancer clause, we would present the facts to the Congress with a request for appropriate action.

The Food and Drug Administration knows of no situation in this country at the present time which suggests the need for modification of the anticancer clause other than that already proposed in my testimony of January 26.

There was indication during the hearings that some believe the anticancer clause requires every additive to be tested for 7 years before a decision can be reached as to its safety. This is not correct.

Safety of a food additive is ordinarily determined by feeding the chemical to test animals for 2 years. This feeding period permits observations to be made on any changes in the test animal that would indicate any type of hazard, of which cancer is but one.

If the chemical passes the 2-year test, it may then be allowed in food. If it fails to pass because the 2-year test raises some question that still needs to be explored, then the decision as to whether further testing should be undertaken is an economic one to be reached by the promoter of the additive.

In the vast majority of cases the 2-year test permits a final decision on the chemical. But if it does not, public health considerations cer-

tainly would require that the chemical not be used until its safety is fully established.

One industry witness objected to any anticancer clause. Another witness argued that it is possible to establish safe tolerance levels for substances that produce cancer when fed to test animals.

Some suggested that the cancer clause be modified to apply only to substances that "proximately" induce cancer. Some would have the ban on cancer producers apply only to colors that induce cancer when ingested in an amount and under conditions reasonably related to their intended use. And another witness proposed that the cancer clause be taken out of its present position in the bill and added with material language changes to section 706(b)(5) so that it would become simply one of the factors for the Secretary to consider in evaluating the safety of a color additive.

It is evident that these changes are intended to give the Secretary the right to establish tolerances for presumed safe levels of colors that produce cancer when tested under appropriate laboratory conditions. Thus, any of the proposals, if adopted, would weaken the present cancer clause in H.R. 7624. For this reason all of the proposed changes should be rejected.

In his supplemental statement of April 25, 1960, which was mailed to the committee, Dr. William J. Darby, chairman of the scientific panel, stated:

> **Finally, legislative requirement of publication of the evidence considered in reaching judgments would greatly promote confidence on the part of the public and scientists as to the degree of protection and safety afforded by our food supply. At the present time evidence submitted other than at public hearings must be kept as confidential information by the Food and Drug Administration until it is released by those who have presented the evidence. Members of both panels from the National Academy of Sciences who have testified before your committee or its subcommittees on food additives legislation have urged a change in this requirement. I believe this desirable.**

We concur in this recommendation.

The CHAIRMAN. Does that conclude your statement, Mr. Secretary?

Secretary FLEMMING. It does, Mr. Chairman.

The CHAIRMAN. Mr. Williams, do you have any questions?

Mr. WILLIAMS. Mr. Secretary, I am sorry that I didn't get a chance to hear all of your statement. However, I have hastily scanned over it. Is it not a fact that certain ingredients in tobacco smoke have been proven to induce cancer in animals?

Secretary FLEMMING. Mr. Chairman and Congressman Williams, you doubtlessly know this is Dr. Mider, of the National Cancer Institute, and I would appreciate it, if it is satisfactory with you, if he would respond to that question.

Dr. MIDER. Mr. Williams, condensates made from tobacco smoke have produced cancers when applied to the skin of mice, repeatedly, sir.

Mr. WILLIAMS. Is it the position of the Department that no tolerance should be allowed in the case of tobacco, and that tobacco will hereafter be banned because it has been proven to induce cancer in animals?

Secretary FLEMMING. Mr. Congressman, it is not. Of course, as you know, first of all, we have no authority in this particular area under existing law, nor would I recommend at this particular point that we be given authority in this particular area.

It seems to me that the responsibility that rests on the Department in this area as of the present time—and I don't think we should go beyond this—is to evaluate the kind of evidence to which you have called attention.

Mr. WILLIAMS. Mr. Secretary, I don't recommend that you do ban the smoking of tobacco because that is the only way I can figure that I can quit.

Secretary FLEMMING. Congressman, could I just complete.

My feeling is that the Public Health Service does have a definite obligation to take the evidence that has been developed in what I know is a controversial area, present that evidence both pro and con to the public, evaluate it for the benefit of the public so that the public can then make up their own mind as to just what they are going to do.

Now, this the Public Health Service, as you know, has done, and I feel that the Surgeon General and those who are associated with him are to be commended for the way in which they have handled it.

But it seems to me this is quite a different proposition as contrasted with a proposition where people are asked to consume food, sometimes knowingly, often without their knowing it, that contains a substance that has been demonstrated to be a substance that induces cancer when included in the diet of an animal.

Mr. WILLIAMS. How does that differ, Mr. Secretary?

Secretary FLEMMING. Well, I think the individual is in quite a different position. The consumer goes to the market to buy food, and under the philosophy that the Congress has followed since 1906, the Federal Government is trying to do everything possible to see to it that when the consumer buys that food, he can buy it with the understanding that it is safe.

Mr. WILLIAMS. The same thing applies to tobacco; doesn't it?

Secretary FLEMMING (continuing). But as far as—and the consumer, I think, on the basis of the action that has been taken by the Congress, has the right to indulge in that particular assumption, and he certainly has the right to feel that he is not buying food that includes in it a substance that has induced cancer when included in the diet of an animal.

As far as tobacco is concerned, the individual is perfectly free to buy tobacco or not, to buy cigarettes or not buy them.

Individuals do feel that it is necessary to buy food in order to sustain life, but the individual is in a position where he can decide whether he is going to smoke or not smoke on the basis of the evidence that has been made available to him by the Government.

As Dr. Mider can point out better than I can, the whole question of the correlation between the increase and the incidence of lung cancer and smoking is a debatable issue.

Mr. WILLIAMS. I understand that.

Secretary FLEMMING. There are those who take the other position on it.

But, as I say, I think the Public Health Service has done what the Government should do in this particular instance. Personally, I don't see any reason why at this point the Government should go further than it has gone.

Mr. WILLIAMS. Mr. Secretary, I will accept that, of course, but I have some difficulty in reconciling the difference, as you have indicated, as between food and tobacco, and as between tobacco and cosmetics.

You have in your suggestions been very careful to suggest that we ban the use of cosmetics which contain any carcinogenic substances that will produce cancer in animals.

Yet, you do not suggest that tobacco, which has already been proven, so I am told, to induce cancer in animals be banned from the market.

There is no compulsion on anyone to use cosmetics; there is to use foods. So let's compare the case of cosmetics with the case of tobacco.

Secretary FLEMMING. Here, again, Mr. Congressman, the Congress some years ago added cosmetics to the Pure Food and Drug Act, and in so doing said, in effect, to the consumer again:

> We are going to do everything within our power to insure the fact that when you use cosmetics, you will use them under conditions that can be regarded as safe.

And, certainly, we feel that that being the case, that the Congress should not, that certainly the Food and Drug Administration should not permit, under the authority given to it by the Congress, the inclusion of a substance which has been shown to induce cancer in animals.

As I indicated in my testimony, with or without a Delaney amendment on the food additives, with or without a Delaney amendment on the color additives, this is the policy that we would follow under the basic authority that has been conferred on us by the Congress.

We know of no other way of discharging that authority in a manner that would be fair to the consumer.

Let me put it this way. As far as the manufacture of cigarettes is concerned, I assume that if the time ever comes when the scientists can identify something that goes into the manufacture of cigarettes that, in and of itself, induces cancer, that the Congress will be very much interested in receiving that testimony and would be very much interested in considering legislation which would confer additional authority on our Department.

But I assume that that particular time has not yet come. But as far as cosmetics are concerned, we feel that the evidence is clear that if a substance, if a color in this case, does induce cancer in animals, that because no one knows how much or how little of that substance will induce cancer in man, it is sound public policy to ban the use of that substance.

Mr. WILLIAMS. Well, I would refer you to paragraph 3 on page 2 of your statement respecting the Department's position in regard to this, which is very clear, in my opinion.

You confine that to proposed color additives legislation. Assuming that tobacco should fall within the jurisdiction of your agency, the position which you have taken with respect to color additives would have to be the same with respect to tobacco, wouldn't it, if the same test is applied and the same yardstick used?

Secretary FLEMMING. Congressman, and Mr. Chairman, I wanted to talk with Dr. Mider about this before I make this statement, and I will make it now subject to further verification.

Mr. WILLIAMS. Let me say this, Mr. Secretary. I am not attempting to embarrass you with these questions at all. I am attempting to find out the scope of this amendment in its application.

Secretary FLEMMING. Congressman Williams, I appreciate your questions because I can assure you that whenever I meet with a group of citizens and talk about this particular problem, the type of question that you have raised is raised with me, and it is a very natural and normal question for people to raise.

But let me put it this way. As far as I know—and I am talking as a layman, as you appreciate; and, as I say, this is subject to verification by the scientists—as far as I know, no one has yet identified a substance that is included in the processing of tobacco or in the manufacture of cigarettes that, in and of itself, does induce cancer in test animals.

Dr. Mider has responded to the question that you addressed in the first instance. From that point on—I don't know whether I should make it as a sweeping generalization, but certainly to a considerable degree from that point on, the evaluation of the situation on smoking in relation to the increase in incidence of lung cancer is based on statistical correlation.

Mr. WILLIAMS. But the test that is required under this bill is: Will it produce cancer in animals; and that has already apparently been conceded by your people, that it does produce cancer in animals.

Using the same yardstick that you used with respect to these other chemicals, if that were construed literally, wouldn't it also be incumbent upon you to ban the use of tobacco?

Secretary FLEMMING. Let's make perfectly clear—and I am sure you agree with me on this—there is no authority in law at the present time——

Mr. WILLIAMS. I understand that.

Secretary FLEMMING (continuing). Which would authorize us to take any action whatever with regard to tobacco. I assume that your question is directed to the point of whether or not there should be authority in law.

Mr. WILLIAMS. Yes.

Secretary FLEMMING. Which would make it possible for us——

Mr. WILLIAMS. It is on the assumption that you should be given authority under law——

Secretary FLEMMING (continuing). To act in this particular area.

As I indicated earlier, on the basis of present research insofar as tobacco is concerned, it is my own judgment that such authority should not be given to us, because I do not believe that research has reached the point where that authority could be discharged in a sound manner.

Mr. WILLIAMS. Wouldn't the same thing apply, however, to many of these chemicals which fall within the scope of this amendment, which, when applied to animals, induced cancer, but there is no proof that they would induce cancer when consumed by man?

Secretary FLEMMING. Congressman Williams, we go back to the basic point that what we are talking about are additives. We are talking about additives to food. We are talking about color additives in this particular instance.

The scientists tell us that when they do induce cancer in animals, that no one knows how much or how little of this substance is needed to induce cancer when included in the diet of man, thinking in terms now of the moment in——

Mr. WILLIAMS. We can debate this all day long.

Secretary FLEMMING. But my only point is this: That we do not feel that it is sound public policy to add to the risk that the consumer must undergo in his daily life by adding these substances either to food or colors when we know that they have induced cancer when included in the diet of an animal.

Now, going to your basic, fundamental point, I still feel that there is quite a distinction between saying to the American people, "Here is all of the evidence that we have as far as the relationship between smoking and lung cancer is concerned, here is our evaluation of that evidence," and on the basis of that evaluation the individual citizen can decide whether or not he wants to continue to smoke.

Now, we have had some experience as a nation—going over into a related area—in saying we do not think that drinking under certain circumstances is good for the health, and, therefore, we will ban the use of intoxicating liquors. After all, the Congress amended the Constitution so as to make that possible.

And on the basis of the experience the Congress and the States decided to repeal that particular amendment to the Constitution.

We have an obligation as a public health agency in that particular area to make available to the American people the evidence that we have which we feel has a bearing on the health of the individual, and then the individual has a responsibility for making up his own mind.

I think that the same thing is true in the field of smoking. That is one thing.

But it is another thing to say to the consumer, as he goes to the market to purchase food, "You may or may not be purchasing food that has had added to it some substances that we know induce cancer when included in the diet of test animals."

We do not feel—and I feel that that is the policy of the Congress—the Congress does not feel that the consumer should be put in that position, because the consumer under those circumstances has no real choice.

He doesn't know whether or not he is buying food that includes some of these substances or doesn't include some of these substances.

Now, I suppose you could get a roughly parallel situation by requiring that the food be labeled to the effect that it includes a substance that has induced cancer when included in the diet of a test animal. Then the individual would have the choice.

But I don't think that anyone would advocate that course of action. Rather, it is the basic policy of Congress that as a Government we have the responsibility of seeing to it that the individual does not involuntarily, in effect, consume a substance that we have discovered induces cancer when included in the diet of an animal.

I appreciate your line of questioning; and I do think that there is a basic difference between the consumption of food, the use of cosmetics, the use of drugs, and the question of whether or not a person is going to smoke; and I think it is somewhat comparable to the question of whether or not a person is going to drink.

In these two areas I think the Government, as I say, has got an obligation to take the evidence, analyze it, evaluate it without fear or favor, make it available to the public, and then let the public make

its own decision. But when you include it in food or in cosmetics, really, the public is not being given the opportunity of making its own decision, because they go in and innocently buy food or buy cosmetics that include these substances that will induce cancer when tested on animals.

If they knew that those substances were there, in many, many instances they just wouldn't want to touch that particular item. But not knowing it one way or another, they go ahead and buy. And we feel that we have an obligation as a Government—I mean I think this is an obligation shared by the Congress and the executive branch—to do everything we can to see that they are not involuntarily exposed to an additional risk in this area.

Mr. WILLIAMS. Mr. Secretary, I can appreciate your explanation and certainly I can appreciate the position which this controversy would place your agency in. But to be perfectly frank, and this would conclude my questions, I have no other questions, but I would like to make the observation that I personally fail to see the distinction or the differentiation between the use of cancer-producing tobacco and the use of cancer-producing cosmetics or additives to food.

However, you have expressed your position and there is no need in asking you to do it again.

The CHAIRMAN. I suppose that would be just about as highly controversial a subject if it were to be brought to a vote, Doctor, as it was with the prohibition amendment.

Secretary FLEMMING. It seems to me, Mr. Chairman, that it involves the same basic issue, and as I have tried to point out, I think it is a different issue than the issue that confronts us in the area of food, drugs, and cometics

The CHAIRMAN. I don't know whether that would be one way of finding out whether there are more smokers than nonsmokers. I doubt that it would be the same situation as to whether there are more drinkers than nondrinkers.

Secretary FLEMMING. But, Mr. Chairman, I do want to emphasize again that although I feel that the Government's role is a different one, I nevertheless feel that it does have a role, and I think the Public Health Service has discharged its responsibility on the smoking side very effectively.

The CHAIRMAN. Mr. Schenck.

Mr. SCHENCK. Mr. Chairman, I appreciate this opportunity, and I have greatly enjoyed this colloquy between our colleague and the Secretary.

As I understand Dr. Mider's statement, it was that the concentrates from tobacco produced this cancer-forming or carcinogenic type——

Dr. MIDER. I think I said, Mr. Schenck, that the condensates of the tobacco smoke produced a tar which would produce cancer when applied to the skin of mice.

Mr. SCHENCK. You were referring to the fact that these were the condensates from the entire tobacco leaf and it was not something that was added to tobacco?

Dr. MIDER. That is correct.

Mr. SCHENCK. So we do have that difference here concerning cosmetics, from the standpoint that colors are additives, and the tobacco, in itself, is the culprit in this case; is that true?

Secretary FLEMMING. That is certainly true, Congressman Schenck, and I think it is a very important distinction to be kept in mind, because what the Congress has been dealing with here all the way along the line is the question of additives. I mean arbitrarily adding something to food or to cosmetics or to drugs as the case may be.

Mr. SCHENCK. Recently I had in my office the owner of a small canning factory who was quite perturbed over the possibility of the banning of such things as red beet juice used in coloring certain vegetables, and also the possibility of banning of a substance called turmeric, I believe, which is used to make mustard yellow. Otherwise, ordinary table mustard would be sort of a putty gray, I understand. Now, are those substances presently being considered?

Dr. LARRICK. We have already considered the turmeric and have put it on a list of articles that may be used, and we have no objection whatsoever to the use of beet juice to color materials in food.

I don't think your constituent has any real reason for any concern whatsoever.

Mr. SCHENCK. That is all the questions I have, Mr. Chairman.

The CHAIRMAN. Mr. Mack?

Mr. MACK. Mr. Secretary, in the case of tobacco, so far as you know, these cancer-producing substances were not a result of spraying the tobacco or treatment in tobacco?

Secretary FLEMMING. Not insofar as we know, that is correct.

Mr. MACK. It is my understanding that some of the cigarette companies formerly used a chemical to retain moisture in the tobacco, is that correct?

Secretary FLEMMING. I wouldn't know that of my own knowledge, but Commissioner Larrick——

Dr. LARRICK. They have used some of the glycols, I understand, to retain moisture in tobacco.

Mr. MACK. That would not be the cancer-producing agent, is that correct?

Dr. LARRICK. We don't know that that is a fact, sir. We don't think that it would be.

Mr. MACK. That has never been determined?

Dr. LARRICK. That is my opinion. It has never been determined. We don't have any responsibility in Food and Drug to do research on tobacco. The things we know about that we just know quite casually without having done any work on it ourselves.

Mr. MACK. Considerable research has been done in that field, Mr. Secretary, on cancer-producing agents in cigarette smoke?

Secretary FLEMMING. Dr. Mider could possibly comment on that.

Dr. MIDER. There is considerable effort, Mr. Mack, on the part of the tobacco industry scientists and scientists throughout the United States in defining the composition and the biological characteristics of compounds obtained from tobacco smoke, but I would like to say, sir, that burning any carbonaceous material in the absence of a completely adequate supply of oxygen is likely to provide or to produce small amounts of a chemical 3,4-benzpyrene, which we can collect in the dust of many cities, which has been part of our environment for years, which does produce cancer in animals, and for good circumstantial reasons we believe could produce cancer in man as well.

Mr. MACK. You have, then, done some research in this area?

Dr. MIDER. Not myself, personally, Mr. Mack. We have done some work at our Institute, and we are familiar with other work going on in the rest of the country.

You see, there is a popular assumption that because the tobacco tar will elicit cancer of the skin in mice, that it is the collection of these tars within the lungs that really elicits the cancer in the lungs.

Now this is the one that has been spoken of by most people and discussed at great length, but it isn't the only other possibility. There are several other possibilities.

Mr. MACK. It is just one possibility?

Dr. MIDER. No, sir; there are other possibilities. And I, myself, am a smoker. I have been smoking for 35 years. I am convinced that the excess smoking of cigarettes is causally related to pulmonary cancer, but I don't know in exactly what way it does it.

I don't know that it is through the deposition of tar in the lungs.

Mr. MACK. Then, to the best of your knowledge, it has not been determined whether this is the result of the actual burning of the tobacco or whether it might be the burning of the chemicals?

Dr. MIDER. That is right, sir.

Mr. MACK. It might be the burning of the chemical instead of the tobacco?

Dr. MIDER. If you mean the chemical in the sense of an additive, I don't know of any such additive, although there may be humectant.

But, after all, tobacco itself is a collection of chemical compounds, and through the burning of those it is conceivable that this might be important in enhancing the carcinogenic effect of the tars that result.

Mr. MACK. Mr. Secretary, aren't there some foods today which are believed to produce cancer?

Secretary FLEMMING. I didn't get the first part of your question, I am sorry.

Mr. MACK. I said are there not some foods today that are being consumed that are believed to produce cancer; that is, untreated food?

Secretary FLEMMING. Here, again, I would like Dr. Mider to respond to that, Mr. Congressman.

Dr. MIDER. Mr. Congressman, I don't know of any in the United States.

Mr. MACK. Has the Department or the Institute done any research on certain types of food?

Dr. MIDER. In what sense, Mr. Mack? Looking for carcinogenic potency?

Mr. MACK. That is right.

Dr. MIDER. No, sir; we have not in a systematic way. But we are greatly interested in this problem at the present time, because the mortality from cancer of the stomach in the United States fell more than 50 percent between 1930 and 1955.

Work which is currently being done by one of our associates, Mr. Hanso, would suggest that the risk to foreign-born Americans, some ethnic groups, of gastric cancer is higher than it is in native-born Americans.

Now if this change takes place within a period of 25 years, and we can show that this occurred within one generation, it would be strong

circumstantial evidence that something in the environment was responsible for this benefit, as it were, to the people.

Now we would like to identify it. Of course, one of the logical things to assume is that something going into the stomach not so much in America, but in some other country, may be responsible for some of the cancers of the stomach. But whether this be a natural foodstuff or what it may be, we have no knowledge at this time.

There have been surveys conducted in the past by a number of physicians attempting to identify dietary constituents that might be associated with the risk of many different types of diseases including cancer. For the most part, these have not produced the type of evidence that we need.

Mr. MACK. Thank you very much.

Secretary FLEMMING. Mr. Chairman and Mr. Congressman, could I just make two observations growing out of our recent discussion.

May I go back for a moment to smoking tobacco, and I think in order to round out that picture, I should make this additional statement, which Dr. Mider tells me is correct from a scientific point of view.

That no cancer has been produced in animals when they have been subjected to conditions comparable to the conditions to which man is subjected when he smokes.

I think in the light of our discussion about this point that in all fairness I should get that into the record in order to keep the record balanced.

In other words, we have, just to sum it up, the point that Dr. Mider made in response to Congressman Williams' question and which Congressman Schenck has also commented on, we have got these statistical correlations about which I appreciate the fact that there is an honest difference of opinion.

But as far as the Public Health Service is concerned, they have come to the conclusion that it is the principal causative factor in the increase in incidence of lung cancer.

But, on the other hand, and this has always been underlined as they have talked to me, and I think it has been underlined in their articles, it is also fair to say, to keep it in balance, that no cancer has been induced in animals when they have been subjected to conditions comparable to the conditions to which man is subjected when he smokes.

At this particular point, of course, the evidence differs from the kind of evidence that we are talking about in connection with food additives and color additives where cancer has been induced in animals when these substances have been included in their diet.

The CHAIRMAN. Mr. Secretary, that brings on another question.

Mr. WILLIAMS. Excuse me, I just want to ask one question. Is that the same test that is applied to color additives and to food additives?

Secretary FLEMMING. Is it the same test?

Mr. WILLIAMS. In other words, when the same chemicals are present in foods or cosmetics, is the same yardstick applied? Is it the same thing under the Delaney amendment, the fact that they may induce cancer, but not under the conditions——

Secretary FLEMMING. I get your point now, Congressman Williams.

The policy that we have followed, the policy that we advocate as sound public policy, is that when it has been demonstrated that a substance will induce cancer—I will stay with the food additive at the moment—when included in the diet of an animal, that then this substance should be banned as far as its use in the diet of man is concerned.

As I have indicated both times when I have come before the committee, our scientists feel that this is the only sound public policy to follow.

Right at that point I would like just to comment on the last one or two questions of Congressman Mack by calling attention to one paragraph in my testimony on January 26, when I said that the population is inadvertently exposed to certain carcinogens.

We accept this, of course. Ultraviolet light occurs in sunlight. The burning of most fuels produces some minute quantities of chemical compounds that elicit cancer in experimental animals, and some of the same agents can be identified in soot, tars, dusts, and similar residues even from the atmosphere.

In view of these facts, it becomes all the more imperative to protect the public from a deliberate introduction of additional carcinogenic materials into the human environment. This is the conviction that we have in dealing with this problem.

Pardon me, Mr. Chairman.

The CHAIRMAN. Well, now, Mr. Secretary, you have raised a second important question.

Did I understand you to say just now that the policy of the Department and the position you take is that when any substance is included which is shown to produce or induce cancer, then, of course, that substance should be abandoned?

Secretary FLEMMING. I said when included in the diet of an animal, when fed.

The CHAIRMAN. Yes. And that is the position the Department takes, and that is your policy?

Secretary FLEMMING. In our judgment, in dealing with these additives, either food or color, we see no reason at all why the individual should be subjected to an additional risk by permitting the addition of either food or color additives that will induce cancer when included in the diet of an animal.

The CHAIRMAN. Now, Mr. Secretary, I have been under the impression that these hearings all along, as highly technical and important as this subject is, that the interpretation that had been placed on the Delaney clause was that there had to be an affirmative showing that it would not induce cancer, and that is a most important point in the consideration of this whole matter.

It is one thing if it is shown that it induces cancer when included in the diet, and no one would argue with you about that. But then the question arises: Does the industry have to show beyond any doubt or convince the Department that an additive will not induce cancer?

Now I would like to know what is the policy of the Department. I think it will help clear up this matter.

Secretary FLEMMING. All right, Mr. Chairman. Let me see if I can state it as we understand it.

As you know, the law——

The CHAIRMAN. One is an affirmative showing and the other is a negative showing.

Secretary FLEMMING. Yes.

The CHAIRMAN. Now which is true?

Secretary FLEMMING. As you know, the law places upon the company that proposes to use a particular substance as an additive to food the responsibility of coming to the Government, and on the basis of tests that it has conducted, demonstrating to the Government that its use under the proposed conditions would be safe.

And under our basic policy, as well as under the Delaney clause, we have said that where those tests show that a substance will induce cancer when included in the diet of a test animal, that it will be banned. It cannot be used under those conditions. This is our interpreation of the Delaney amendment, and it is our conviction as to sound public policy.

Now as I pointed out in my statement, Mr. Chairman, I don't want to suggest again, as apparently maybe we have inadvertently on other occasions, that this does not allow for any exercise of judgment. There is provision made there for the exercise of scientific judgment.

The CHAIRMAN. Where is it?

Secretary FLEMMING. As to whether or not the substance will induce cancer when included in the diet of an animal. Certainly, that is a determination that can be made only by scientists, and on the basis of scientific evidence. But once that determination has been made, then we do not feel that anybody in the executive branch should be able to exercise judgment, because we don't think that there has been any showing made to the effect that there is any reason at all for adding that additional risk to what all of us are already subjected to in this area.

The CHAIRMAN. Will you point out the language to me?

Secretary FLEMMING. The Delaney amendment language?

The CHAIRMAN. No, the language that you just mentioned which gives you the authority to exercise judgment.

Secretary FLEMMING. You mean the language in the Delaney amendment that gives us authority to determine whether or not it is, in fact, a cancer-inducing substance?

The CHAIRMAN. I am just taking your own statement, Mr. Secretary. You have just said that there is some misunderstanding.

Secretary FLEMMING. About the Delaney clause?

The CHAIRMAN. That there was in this provision authority to use judgment as to whether or not it was cancer-producing.

Secretary FLEMMING. All right. I now have in front of me H.R. 7624, Mr. Chairman.

The CHAIRMAN. Yes.

Mr. DINGELL. Which, incidentally, is sponsored by the chairman of this committee.

The CHAIRMAN. And introduced at the request of you, Mr. Secretary.

Secretary FLEMMING. That is correct, Mr. Chairman. I can assure you that I am very happy to acknowledge the fact that we did make such a request.

First of all, I am going to read the Delaney clause in the food additives amendment. I will read that first. It says:

Provided, That no additive shall be deemed to be safe if it is found to induce cancer when ingested by man or animal, or if it is found—

and I emphasize the word "found"—

after tests which are appropriate for the evaluation of the safety of food additives, to induce cancer in man or animal.

Now, that finding has got to be made on the basis of scientific evidence. The evidence has to be weighed by component scientists and a conclusion reached as to whether or not this evidence establishes the fact that the substance does induce cancer.

I am not sure who was the original author—I mean who worked up the language originally as far as the Delaney clause is concerned. But I am sure that the person who drafted it originally certainly had in mind that this finding would have to be made on the basis of carefully evaluated evidence.

Now, if I may turn to the color additive proposal that is pending before this committee, it says:

A color additive, (1) shall be deemed unsafe and shall not be listed for any use which will or may result in ingestion of all or part of such additive if the additive is found—

and I emphasize the word "found" again—

to induce cancer when ingested by man or animal, or if it is found, after tests which are appropriate for the evaluation of the safety of additives for use in food, to induce cancer in man or animal.

Certainly, no responsible public official could make such a finding except on the basis of a careful weighing and evaluation of evidence pointing in this particular direction. It is my understanding, Mr. Chairman, that scientists are not always of one mind as to whether or not the evidence that is presented does point to the conclusion that it has induced cancer when included in the diet of an animal; that this is something on which scientists can and do disagree from time to time.

Am I correct, Dr. Mider?

Dr. MIDER. Yes, sir.

The CHAIRMAN. That is the big problem that we have here, because there are so many that have disagreed on this thing.

Secretary FLEMMING. And this is why I think, Mr. Chairman, and I am glad that you press me on this point, because I think this is why it is important to——

The CHAIRMAN. But you haven't satisfied me on the other point, Mr. Secretary.

Secretary FLEMMING. Which other point, now?

The CHAIRMAN. The other point is: Do you, as a matter of policy, require industry to show that it will not induce cancer in order for it to become safe?

Secretary FLEMMING. I will ask Commissioner Larrick to reply.

Dr. LARRICK. Our practice, Mr. Chairman, is to require the manufacturer of a new chemical additive to present ordinarily 2 years of experimental feeding. Two years in the rat is comparable to the lifespan of a man.

We like a second animal to be used in addition to the rat, so that we will pick up species variation.

Now, if in that first 2 years of feeding any serious suspicion of carcinogenicity is raised, then we do not allow the chemical because we can't honestly make a finding that it is safe, because we don't know.

But in the vast majority of cases—and I only know of a very few exceptions since you have given us the pesticide law and the chemical additive law—the 2-year feeding has satisfied it, and the material either goes into the food supply or is put out of the food supply on the basis of the 2-year feeding.

Now, the only time when you might approach the necessity of a negative finding would be when your 2-year work or some other scientific work makes the scientific fraternity grossly suspicious that if this material were fed to man, it might cause cancer.

And only then does that come into the picture; and, as I have said, it has rarely come into the picture.

The CHAIRMAN. You remember during the course of the hearings we had some weeks ago there were various representatives of the industry in the package business that were meeting with your Department. I think the last report I had was that some of their fears were resolved, in a way, but I am not sure about that.

I don't think that I was satisfied. I don't know if that was worked out completely or not.

Dr. LARRICK. No, I wouldn't say it is worked out completely. The substances that they brought to us—and this included the paper manufacturers, the container manufacturers, and the other people that make things that foods go into—the materials that they presented to us fell into three categories:

(1) A category where we could on the basis of our present knowledge say there is no migration of this material into the food, so it isn't a food additive; or

(2) There is migration, but we know it is in an amount and of a kind that is safe, so those we clear;

(3) Then there was another class where we don't know.

But the probabilities are that there is no harm, and that legislation gives us the right under those circumstances where we can make a finding that the possibility of harm is quite remote, to give them a year's time within which to complete their testing.

So we have allowed some things in without hesitation. We have put the others in this list where they have an additional year. And then there were some materials which we and they decided would best be discontinued. And that is where the matter stands, and they are working energetically to complete their testing procedures.

The CHAIRMAN. Then it is not a fact that the policy of the Department in the interpretation of this language, requires the industry to show that an additive does not induce cancer in order for it to be safe.

Dr. LARRICK. That is quite correct.

The CHAIRMAN. I am glad to get that cleared up, and I think industry will have probably a different viewpoint on this thing, if it can be cleared up.

Now, I understood the issue at that time was that some of these containers that have been used a long time—and, as you said, there

were some that were recognized as safe without any question—but that the producers of these containers were placed in the position that they could not convince, or prove, to your Department that there was no cancer-producing element in connection with it. That is what I understood the big controversy was about.

They knew they were safe, but the scientists had not developed a technique yet where they could say beyond all question of a doubt.

If you interpret this language the way you have just said, I think it lessens somewhat the controversy.

Secretary FLEMMING. Mr. Chairman, could I put it this way.

Commissioner Larrick has indicated that when a person files application for the use of either a color or a food additive, that under the law he must then file with the Department the results of his testing program.

The Department ordinarily requires a feeding program of 2 years, and, as he indicated, ordinarily would require that the testing be carried on with two types of animals, not just one, but two.

This they must do. If those tests——

The CHAIRMAN. And I don't think anybody in industry has quarreled about that, have they?

Secretary FLEMMING. I wouldn't think that they would, because certainly, it seems to me, that this is a duty that they owe the consuming public.

Now, if these tests show that these substances have induced cancer when ingested by these animals—and, as I said earlier, this question of whether they do or do not show is a matter for scientific determination and the exercise of scientific judgment—but if they show that they have induced cancer when included in the diet of one or both of these animals, then under the law we must ban the use of that particular substance.

Mr. Chairman, I think part of the misunderstanding has developed, as I have discussed it with our people, out of what happens after that.

I mean, here they have carried on the 2-year test. They have submitted their results of the tests. In the judgment of competent scientific personnel these tests demonstrate that cancer has been induced in one or more of these animals, or raises serious question. Then the question is: Does that shut the door once and for all? This is just a 2-year test.

Now, the Department, because the manufacturer may come back and say, "Well, I think if there were longer tests, that maybe you would arrive at a different conclusion," the Department is perfectly willing to have them carry on longer tests, and present the results of those longer tests to the Department for evaluation.

As I understand it, under those conditions, I mean having arrived at this first result after the 2-year study, under those conditions the Department would normally ask for about 5 years of additional testing. But this has happened in only one or two situations.

Out of that has grown the feeling that we would require a 7-year testing program, whereas, basically, the length of the test is ordinarily 2 years.

It is only when the results of the tests that they, themselves, have carried on raise real question as to carcinogenicity that we use—and

we think properly so—our discretion; that in view of the question then we say it can't be used.

Then they come back to us and say, "Well, we think if we carried on additional tests, maybe you wouldn't arrive at that particular conclusion."

And, of course, we don't deny them the right to carry on additional tests, and we shouldn't. We will evaluate those when they are over.

The CHAIRMAN. Mr. Younger, I apologize for utilizing your time.

Mr. YOUNGER. That is perfectly all right, Mr. Chairman. I have enjoyed it.

There are two points that I would like to clear up. If I understood the testimony a while ago, it was that cancer of the stomach has been on the decrease; is that correct?

Dr. MIDER. That is correct, Mr. Younger.

Mr. YOUNGER. Cancer of the lung has been on the increase?

Dr. MIDER. Yes, sir.

Mr. YOUNGER. The only substance that goes into the lung is air, isn't it, or is it?

Dr. MIDER. I am afraid not. It is an important organ.

Mr. YOUNGER. Then it could possibly be something else even in the diet?

Dr. MIDER. Yes, sir.

Mr. YOUNGER. That produces lung cancer?

Dr. MIDER. It could be.

Mr. YOUNGER. Other than smoking. You have no tests, no information on that subject yet?

Dr. MIDER. No, sir.

Mr. YOUNGER. Now, one other question that bothers me of your testimony, Mr. Secretary.

I wonder if this is true. Should you conduct tests of some foods, say carrots, and you found that by testing those with animals that carrots produced cancer, you have no authority under the law to take food off the market even though it is proven by your tests to produce cancer; is that true?

Dr. LARRICK. No, sir. If it is proven positively to be a dangerous substance, under sections of the law that have been in effect since 1906 the Federal court has the right to seize it and remove it from the market.

Mr. YOUNGER. Well, now, that is different than what you said a while ago, because you said you had no authority over anything except that which was an additive to food.

Secretary FLEMMING. Mr. Chairman, I think whatever misunderstanding may have developed on that grew out of the discussion with Congressman Williams on tobacco and on smoking. Of course, that is not classified as a food.

Mr. YOUNGER. No.

Secretary FLEMMING. And, consequently, the Department never has had any jurisdiction over that. I think once somebody alleged that by smoking a particular brand of cigarettes, you could reduce your weight, and I think that the Department regarded that as a claim over in the drug area and did move in and take some action.

But outside of some action of that kind, the Department has no authority in that particular area.

I am sorry, you and I were talking back and forth about additives, so that my stress was on that.

But, certainly, as Commissioner Larrick has pointed out, since 1906, if it can be demonstrated that a food would have the kind of results that he indicated, the Department does have authority to take action. But tobacco and smoking does not come within any definition of the law under which we operate.

Mr. YOUNGER. I have a resolution that was sent to me by the berry growers of California called the California Berry Advisory Board. The substance of their resolution is this:

Be it resolved, That the boysenberry growers and processors, meeting at the University of California at Davis, November 18, 1955, urgently recommend action be taken to authorize public regulatory agencies to condemn food products only on the basis of a proven scientific fact.

Are you in any way condemning food products other than on the scientific facts?

Secretary FLEMMING. I certainly hope not.

Mr. YOUNGER. Then you would concur with this resolution?

Dr. LARRICK. Mr. Younger, the Food and Drug Administration has no authority of its own to condemn anything. Any punitive action that we take, either a criminal action, an injunction, or seizure of merchandise, has to be done by our taking the facts to the U.S. Department of Justice; getting it into the hands of the U.S. attorney; a libel or other legal document is presented to the Federal judge; he signs it; the merchandise is confiscated or the action is started; and if anyone disagrees with the facts we allege, he is entitled to a trial by a jury of 12 people.

I think the procedures are completely fair in that respect, sir.

Mr. YOUNGER. I just have one other question.

The CHAIRMAN. On that point, will the gentleman yield?

Mr. YOUNGER. Yes, sir.

The CHAIRMAN. Is that the procedure you took when you took all the cranberries off the market?

Dr. LARRICK. Yes, sir; we seized the cranberries.

The CHAIRMAN. How?

Dr. LARRICK. By libel filed in the Federal courts.

The CHAIRMAN. In Washington, Wisconsin, Massachusetts?

Dr. LARRICK. We didn't seize them until they moved in interstate commerce, but the ones that we found on the market contaminated with aminotriazole were seized pursuant to libels of condemnation filed with the Federal courts.

The CHAIRMAN. I am glad to have that information. The newspapers, of course, gave the indication that your Department just went in and seized them wherever you found them, on the shelves, in wholesale houses, and everywhere else.

Dr. LARRICK. We have no power to do that, and we don't want that power.

The CHAIRMAN. And you did not just go in on your own in your own Department?

Dr. LARRICK. No.

The CHAIRMAN. And seize all this?

Dr. LARRICK. No, sir. We filed libels with the Federal court. The U.S. marshal seized them.

The CHAIRMAN. That is certainly interesting.

Secretary FLEMMING. Mr. Chairman, I think that the detailed statement that I——

The CHAIRMAN. You got the credit; the U.S. marshal didn't.

Secretary FLEMMING. I can testify to that, Mr. Chairman.

Mr. Chairman, I think that the detailed statement that I filed with the committee, when I appeared on January 26, regarding that particular matter, bears out definitely what Commissioner Larrick has said.

Mr. YOUNGER. Just one question.

As I understand it, where stilbestrol is used in the preparation of food for animals, it is permitted in a number of cases, isn't that true?

Secretary FLEMMING. Yes.

Mr. Congressman, this illustrates one of the points that I have been making in my testimony. Where we have found that its use in connection with the feed for cattle does not leave any residue in the food that is consumed by man, we have taken no action; and we are suggesting that the Delaney amendment be amended to make that doubly clear: that that is the policy of the Congress.

Mr. YOUNGER. Now, you have a certain food for cattle that has that substance in it. Now, the chemical industry develops another chemical and they prove to your satisfaction that it is not carcinogenic in any way. Do you permit them to use that chemical with stilbestrol in the mixing of food?

Dr. LARRICK. This question becomes very complicated because the food additive amendment says that any previous permissions that have been given to use substances in food shall be continued.

We had allowed a number of firms to add stilbestrol to the feed of animals and you have these permissions still in effect—as you have described. But the law further says that if an article is capable of causing cancer when consumed by mouth by man or animals, then no further permissions shall be granted.

Now, that brings about the very bad situation where a small feed manufacturer or a large feed manufacturer on one side of the street can continue to merchandise his feed containing stilbestrol, but because we are not allowed by the statute to issue any new permits, if the man across the street makes his application to us we have to turn it down.

So, if the man who has the effective application for stilbestrol wants to add something new to it and he thereby has to file a new petition, we are not permitted under the statute to make his petition effective.

That is why the Secretary is recommending that if the substance does not go into the food that human beings eat, and if the substance does not harm the animal, that that exception to the Delaney amendment should be permitted. And we would then be relieved of an administrative problem that I think is unfair.

Mr. YOUNGER. Then the food manufacturer could proceed with an added chemical provided it was safe?

Dr. LARRICK. Right.

Mr. YOUNGER. And the amendment would cure that defect?

Dr. LARRICK. That would cure that defect.

Mr. YOUNGER. That is all, Mr. Chairman.

The CHAIRMAN. Mr. Dingell.

Mr. DINGELL. Mr. Chairman, I look at the clock and I note that it is 10 minutes to 12. I was wondering if we could have some thought from the Chair as to how long we will meet today.

The CHAIRMAN. We want to proceed until we get through with this witness.

Mr. DINGELL. I would like to have every other member have a chance to ask a couple of questions.

The CHAIRMAN. You may proceed, and we will see how we get along. I do hope we can get through before we have to adjourn, unless there are many questions by the other members.

Mr. DINGELL. Thank you, Mr. Chairman.

I was particularly interested in this business of new drug applications that we have been discussing. Under the so-called new drug sections, would you be precluded from removing stilbestrol from the market if you were to suddenly find that there was some new hazard or some tremendous hazard that requires the cancellation of the outstanding permits, so to speak, of the outstanding licenses to persons who have been using it under preexisting license from Food and Drug?

Secretary FLEMMING. Mr. Congressman, there is a procedure set forth in the new drug section of the law under which we could proceed under these circumstances.

As you know, it is a more formal and a more involved procedure than the procedure that we would follow under comparable conditions dealing with a pesticide or dealing with a food additive; am I correct on that?

Dr. LARRICK. Yes; I might add, sir, that the action that was taken with respect to stilbestrol was a voluntary action. But three of the firms who agreed to temporarily discontinue the distribution of stilbestrol disagree basically with the Department's position, and so they have asked for their rights under the statute.

We have set a hearing, a date for a hearing, and a hearing has been in progress now for some weeks whereby the Government presents its evidence and the other side is presenting its evidence.

Then, after that, that record is compiled and it is a private hearing; the aggrieved party is entitled to appeal to the Secretary.

If the Secretary rules against him, then he has an appeal to the U.S. district court, a very good process, but it is not a quick process.

Mr. DINGELL. In the event that this proceeding is adverse to the applicants who desire to begin or to continue using stilbestrol, what impact will this have on other stilbestrol users on the market now?

Dr. LARRICK. It would be our obligation, if we revoke the applications for stilbestrol, to revoke them for each of the parties involved individually. Most of them agreed to having their permits canceled, but three did not.

And after that, if we were to prevail and they would still continue to merchandise it, it would be an illicit article in commerce. And, as you know from your experience in Detroit, we would file a libel, probably a criminal action, too.

Mr. DINGELL. Mr. Secretary, I want to commend you and compliment you for your statement this morning, for the very fine statement which was also made by Commissioner Larrick and by Dr. Mider.

I have been very much impressed by the work of Commissioner Larrick and Dr. Mider, and also by the testimony you have given here.

I would like to conclude by just asking one thing. Will you again comment on the judgment that the Delaney amendment, as in the present law and as in the bill before us, confers on you and on the Food and Drug Administration with regard to whether or not a substance is a cancer producer in an animal or a human being?

Secretary FLEMMING. I will be very happy to, Congressman Dingell, because, it seems to me, that at times the Delaney clause has been unfairly characterized on that particular point.

As I indicated in reading the clause as it appears both in the proposed color-additive legislation and also in the food-additive legislation, there must be a finding that the substance has induced cancer when ingested by man or animal, or there must be a finding after tests which are appropriate for the evaluation of the safety of additives for use in food that they have induced cancer in man or animal.

This finding is a scientific judgment based on the weighing of scientific evidence, and it is certainly never, as I understand it, just open and shut, necessarily.

Let me put it this way. There certainly are situations where scientists differ as to how the evidence should be weighed and what the conclusions should be.

But, as I see it, we have the responsibility under our general authority and under the Delaney clause to weigh that evidence and to arrive at a conclusion.

As Commissioner Larrick has pointed out a number of times, certainly, if people want to take issue with the way in which the evidence has been weighed and the conclusion that has been arrived at, there are ways of doing so.

Mr. DINGELL. This is, in effect, then, the exercise of scientific judgment by scientific people as to whether or not this substance creates cancer in a test animal or in a human being.

Secretary FLEMMING. That is right. It must be, as I see it.

Mr. DINGELL. Furthermore, Mr. Secretary, you have authority to call in independent scientists not employed by the Department?

Secretary FLEMMING. We certainly do. We have ample authority along that line both in the Public Health Service and in the Food and Drug Administration.

Mr. DINGELL. And with specific emphasis on determinations under the so-called Delaney amendment, or the cancer clause?

Secretary FLEMMING. We certainly do, ample authority.

Mr. DINGELL. And, as a matter of fact, you have done this in the past, have you not, Mr. Secretary?

Secretary FLEMMING. Yes.

Take aminotriazole which, as you probably recall, is under the pesticide amendment. If the manufacturers of that particular pesticide had not agreed with the determination that was made by the Food and Drug Administration, they had the right either to appeal or had the right to request us to set up a scientific panel on the recommendation of the National Research Council. This is written into law.

Mr. DINGELL. Did they choose to do so?

Secretary FLEMMING. They did not. We recommended, of course, that a similar provision be inserted in the food-additive law. That recommendation was not accepted. We would have no objection to a similar provision being in the color-additive law.

Mr. DINGELL. Excepting you can do it as of now?

Secretary FLEMMING. We can do it and will do it.

Mr. DINGELL. And have done it in the past?

Secretary FLEMMING. That is right.

Mr. DINGELL. Whether by law or not?

Secretary FLEMMING. The fact of the matter is, Mr. Congressman and Mr. Chairman, I think I should point this out to the committee: that we have, or I have, taken action under which, before a final determination is made by us as to whether or not a substance induces cancer, the evidence will be considered by a panel made up of representatives of the Food and Drug Administration and the Public Health Service, with the assistance of a scientist or scientists from the Department of Agriculture, and with the assistance of scientists nominated by the National Research Council.

Mr. DINGELL. One last question along this line.

In the tests that are run by which the industry tests a certain substance for safety, the tests are actually performed by industry under the guidance and approval of the Food and Drug Administration; isn't that true?

Dr. LARRICK. I would say that a great many of them are performed by universities that are employed by industry. There are some industries that have their own testing facilities. But they are not required to come to us ahead of time and get approval of their proposed testing.

Most of them do that, but as a legal matter they are not required to submit their data or their plans to us until the work is completed.

But at that stage we have plenty of authority to decide whether or not it is valid work honestly done.

Mr. DINGELL. So the exercise of judgment under the food additives and pesticide law and under the proposed bill before us actually would be largely in the hands of the industry concerned rather than exclusively in the Food and Drug's hands, as they seem to indicate?

Dr. LARRICK. We would certainly say that, in part, they participate very extensively in the scientific judgment, but we have the final responsibility of appraising their data, and being sure that we give the public the protection that the Congress has intended.

Mr. DINGELL. Now, while you do run independent tests within the framework of the Food and Drug and within the framework of its responsibility, nevertheless, the bulk of these tests probably are performed by industry acting under the supervision of Food and Drug or in consultation with Food and Drug, with final approval of the tests invested in the hands of the Food and Drug Administration in the Office of the Secretary?

Dr. LARRICK. You are quite right.

Mr. DINGELL. Gentlemen, I certainly thank you for a very fine exposition. I compliment you, Mr. Secretary, for the fine work you are doing in consumer protection through the Food and Drug Administration, and other agencies under your leadership.

Secretary FLEMMING. Thank you.

The CHAIRMAN. Mr. Nelsen?

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Mr. NELSEN. It is my understanding, Mr. Secretary, that there has been a Presidential Scientific Committee that has made a study. Have you any knowledge as to whether or not that study is complete?

Secretary FLEMMING. As a White House statement indicated some weeks ago, the President did request information from the scientists in the Department of Agriculture, in the Department of Health, Education, and Welfare, and from his own Science Advisory Committee, which is located in the White House.

That information has been supplied. I do not know as to whether or not a report has actually been made to the President, and, of course, consequently, I do not know what action, if any, he may take.

Mr. NELSEN. You have not studied the report in your office to this date, or have you seen the report?

Secretary FLEMMING. We have had the opportunity of consulting with the President's Scientific Adviser, Dr. Kistiakowski, and also the Chairman of the President's Science Advisory Committee. We have commented on various points that have been raised.

But, as I say, I do not know what the final content or form of the report may be; nor, obviously, do I know what may be the President's reaction.

Mr. NELSEN. Could I suggest that this committee have this report before we finally take action? This is a very complicated process, obviously, and it would seem that we should have that report and your observations relative to the report before we take action.

Secretary FLEMMING. Of course, this is information that was requested by the President, and, obviously, it wouldn't be appropriate for me to comment on what the President may or may not do with the information.

Mr. NELSEN. Thank you.

No more questions, Mr. Chairman.

The CHAIRMAN. Mr. Hemphill?

Mr. HEMPHILL. Mr. Secretary, I would like to direct your attention to the last paragraph of your statement on page 4.

Secretary FLEMMING. Yes, sir.

Mr. HEMPHILL. Including the first four lines of page 5. Am I to assume from that statement that this legislation, if it is passed—that you are not going to have any authority that you do not now have?

Secretary FLEMMING. In respect to this particular matter that we have been talking about; not in respect to the color additive situation generally.

I mean the color additive bill does, of course, confer additional authority on the Department. But in respect to determining that we will not permit a cancer-inducing substance to be used—we feel that we do have that kind of authority under the broad delegations that have been made to the Department over the years by Congress.

Mr. HEMPHILL. Then, so far as your Department is concerned, the Delaney amendment would not give you any authority that you do not now have?

Secretary FLEMMING. As I understand it, when Commissioner Larrick appeared before this committee in connection with the Delaney clause as it was proposed for the food additives amendment, he made the point that we had that authority and would exercise it along the line of the Delaney amendment.

Mr. HEMPHILL. Then can I assume the Delaney amendment would just be window dressing insofar as legislation is concerned?

Secretary FLEMMING. No, Mr. Congressman, I do not so interpret it. As I indicated in my testimony on January 26, and as I tried to emphasize again today, I think that in view of the seriousness of this problem, a great deal can be gained by the Congress joining with the executive branch to give added assurance to the consuming public that this is the kind of policy that they can count on being followed.

In other words, I see a lot to be gained by the executive and legislative branches presenting a united front on a matter of this kind.

Mr. HEMPHILL. I certainly subscribe to that. I just don't want to be put in the position, as a representative of the people, of perhaps passing some amendment which might give rise to a belief that here we have taken care of this situation which is continuously being criticized in our Nation.

I don't want the Congress, nor the Reresentative of my district, being said to be put in a position of having done something that we haven't. That was the reason for my question.

Do you think there is any possibility of our saying to the public, if we adopt the Delaney amendment, that we are giving assurance now that we are not going to have these cancer-causing ingredients in the foods which are shipped in interstate commerce?

Secretary FLEMMING. Of course, any action that is taken by the Congress in this general area—and I am not just talking about the cancer area now, but I mean in the whole area of food, drug, and cosmetics—has to be subject to certain qualifications: namely, the ability of the Department to keep up with situations as they develop, whether or not it has sufficient resources to do that, and so on.

So I think that it would be unfair to create the impression that because this was included that no one has got to worry about it at all any more.

I think the impression that would be created is that the Congress and the legislative branch, working together, are determined to do everything that it is possible to do in order to cut down on the risks that people may be up against in this particular area.

I think, for example, Mr. Congressman—and I wasn't here when the food addi'ives legislation was—well, it was passed just after I took office, and I didn't participate in the hearings at all—but as I look back on it, it seems to me that it was a very wholesome thing for the Commissioner of Food and Drugs to say to this committee this is the policy that we will follow.

And then for the Congress to, in effect, say, "Well, we certainly agree with you that this is a sound public policy, and because we agree with you and because of the importance of this par'icular issue, we are going to state our conviction and our belief affirmatively by including the clause that Congressman Delaney suggested should be included."

And I feel the same way as far as the color additive legislation is concerned. I think this is particularly true in view of the discussion that has taken place regarding it. The only reason I included this statement was I wanted to make it perfectly clear that if this clause were not included, we would still feel that as public officials this is

the policy that we should follow in the discharge of the overall duties and responsibilities that have been placed on us by the Congress.

In other words, I wouldn't want any misunderstanding on that to develop in the public mind.

Mr. HEMPHILL. I have in mind last year you issued some ruling or authority. As a result of it some industry—I won't name it—down in my part of the country called on me.

We got in touch with the people, and they assured us that the situation wouldn't arise. So the industry asked if I would issue a press release on it, and I refused to do so. I said to issue a press release would give the public, depending upon my supposed knowledge, the wrong information, or at least arouse suspicion of the product, or something of that nature.

And I thought that it best be handled just as it was handled between your Department and the industry through my office. I thank you for it. But I didn't want us to get into that same sort of position with the Delaney amendment by saying we have got it all taken care of and now you can eat what you want to and the food is not going to be a cancer-causing agent.

That is my reason. Thank you very much.

Secretary FLEMMING. I think a fair statement would be that we are headed in the right direction and that we are doing everything we can to give you protection, as we talk to the consumer.

Mr. HEMPHILL. I subscribe to that. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Keith?

Mr. KEITH. Thank you, Mr. Chairman.

Mr. Secretary, on page 2 of your statement, "Comments on Testimony on the Cancer Clause in H.R. 7624," dated May 9, 1960——

Secretary FLEMMING. The Food and Drug memorandum, you mean?

Mr. KEITH. Yes.

You commented that it has led the Food and Drug Administration over the years to follow a policy of requiring a safety factor of 100 for new chemicals foreign to man's food.

That is, animals should show no adverse effect when they consume 100 times as much of a chemical as is proposed for man's diet.

Now, was this the factor that was used in the case of aminotriazole?

Dr. LARRICK. Well, the facts there were that when rats were fed 10 parts per million of the chemical they developed a cancer of the thyroid.

Mr. KEITH. In 10 parts per million?

Dr. LARRICK. Ten parts per million was the lowest dose at which cancer was produced. We never did feed it at a level where there was no effect. But producing cancer would outlaw it regardless of a 100 to 1 tolerance that we applied to other types of injury to the animal.

Mr. KEITH. Who conducted the tests that found cancer at 10 parts per million?

Dr. LARRICK. The laboratories that were employed by the firms that were merchandising the weed killer. Some of it was done in American Cyanamid Laboratory; some of it was done in a commercial laboratory out here in Virgina; very good laboratories, both of them.

Mr. KEITH. Within your Department, who reviewed this particular chemical analysis?

Dr. LARRICK. Dr. Lehman, the chief of our Division of Pharmacology, and his associates in his division and other scientists in the Department.

We have a routine whereby we review it pharmacologically, medically, if necessary, chemically, and we pass the document around among the various scientists so that the final decision is an institutional decision, rather than an individual decision.

Mr. KEITH. What role did Dr. Stewart play in all of this, if any?

Dr. LARRICK. I don't think Dr. Stewart made any—played any role in it. He is a scientist at the National Cancer Institute.

Dr. MIDER. You mean Dr. Harold L. Stewart?

Mr. KEITH. Yes. The one that was on the panel.

Dr. LARRICK. He played no part.

Mr. KEITH. It was pointed out by someone here that the cranberry people didn't have the advantage of the panel in the case of determining whether or not this course of action was sound.

I might say that there is no opportunity for the third party, the injured party, in this instance to have the advantage of the panel. It was the American Cyanamid that——

Dr. LARRICK. There were two chemical firms involved. Both of them were petitioners, and either of them, under the statute, could have applied for and been entitled to the panel.

I do not think that a third party under the law as it is written would be entitled to the panel.

Mr. KEITH. Do you know why they didn't request such?

Dr. LARRICK. I don't know that, sir.

Secretary FLEMMING. Could we just check your point, Congressman Keith, on the third party law?

Dr. LARRICK. The way we have administered it is that anyone who has registered the substance with the Department of Agriculture and applied to us for a tolerance is entitled to have this committee appointed and anyone else is not.

Mr. KEITH. What is the proper time to ask for such a panel?

Dr. LARRICK. There are time limits in the statute. I have forgotten exactly what they are. I think it has to be done within 90 days after the Department of Agriculture certifies to us that the chemical is useful to agriculture.

The section of the law that applies, Mr. Keith, is section 408(d)(3) of the Federal Food, Drug, and Cosmetic Act. It says:

> In the event that the person filing the petition requests within 90 days after certification of usefulness by the Secretary of Agriculture under subsection 1 with respect to the pesticide chemical named in the petition, that the petition be referred to an advisory committee, or in the event the Secretary of Health, Education and Welfare within such period otherwise deems such referral necessary, the Secretary of Health, Education, and Welfare shall forthwith submit the petition and other data before him to an advisory committee to be appointed in accordance with subsection (g) of this section.

That subsection (g) provides that the Secretary, or whoever he has delegated the responsibility to, shall ask the National Academy of Sciences to designate some individuals that are knowledgeable in this field. Then the Food and Drug Administration appoints them.

So the Food and Drug does not participate in the choice of the scientists who serve on this advisory panel. And the committee's findings are not binding. They are simply advisory.

Mr. KEITH. What role does such a panel, or a similar panel, play in the early decision, the fundamental decision whereby a subject is deemed to be a carcinogen so far as animals are concerned?

Dr. LARRICK. It depends on the nature of the problem. But if the problem is so clean cut that we feel that our scientists can handle it without any outside consultation, they do so handle it, and they make a recommendation to the administrative officers, and we act on it.

But if in the judgment of our scientists the question is sufficiently close so that they want the benefit of skills that are not contained within the Food and Drug Administration, they are at liberty to go to the Public Health Service, to go to the National Research Council, to go to the universities, or to go wherever the scientific information that we need exists and get that advice.

Mr. KEITH. Is there any place for a potential employer of the chemical or substance under question at that time to request that a panel's action be taken?

Dr. LARRICK. No, not at that stage. There is no authority in the statute whatsoever for the petitioner to have a panel under food additives, and the time limits allowed there are so short that it really hurries us to get that sort of consideration.

In the pesticide amendment they have it as an absolute right. They have to pay the costs themselves. The industry pays the costs, and it has been used on several occasions. Every time it has been used, we have followed the advice of the advisory panel.

Under the law a user of the weedkiller, of the chemical, would not have the legal right to ask for a panel, but all he would have to do to acquire that legal right would be to file a petition.

Actually, we have been very free to get outside advice at the suggestion of industry or at the suggestion of our own scientists, and we would welcome, if the Congress cares to do it, to see this advisory committee principle go through the entire Pure Food and Drug Act.

But we would have to change the time limits within which we must act on a petition so that we could give the panel time to consider the petition, and, secondly, I should think that if industry or anyone else wants to have the panel convene, they should pay for it. I don't think it should be paid for out of the Treasury.

Mr. KEITH. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Brock?

Mr. BROCK. No questions.

The CHAIRMAN. Mr. Springer?

Mr. SPRINGER. Mr. Secretary, just one or two questions about the cranberry matter.

Are you a lawyer, Mr. Flemming?

Secretary FLEMMING. All I can say in response to that is I am a graduate of a law school, but I have never practiced law.

Mr. SPRINGER. Mr. Larrick, are you a lawyer?

Dr. LARRICK. No, sir; I am not a lawyer.

Secretary FLEMMING. We have got some lawyers here.

Mr. SPRINGER. Did you handle this matter, the cranberry matter?

Dr. LARRICK. Yes.

Mr. SPRINGER. You are familiar with it?

Dr. LARRICK. Yes. I don't know about all of it, but I am very familiar with it.

Mr. SPRINGER. I am going to direct this question at both the Secretary and you.

Did the Department of Health, Education, and Welfare follow all of the legal prerequisites of the law and the regulations pursuant thereto prior to the seizing of the cranberries in the fall of 1959?

Dr. LARRICK. The answer to that is "Yes."

Secretary FLEMMING. I concur in that.

Mr. SPRINGER. I ask this of the Secretary.

Mr. Secretary, I have only read the newspapers, and, therefore, I am only acquainted that far. It was my understanding that you had presented a plan to the Ways and Means Committee which was substantially the administration plan for health benefits for those above 65 years of age; am I correct?

Secretary FLEMMING. Yes, sir. I presented a plan last Wednesday and the testimony—at that time I presented to the committee a written statement, and that written statement was released to the press, and it was on the basis of that that the stories to which you refer were written.

Mr. SPRINGER. In that plan is there any provision for social security taxes?

Secretary FLEMMING. Not in our plan, no.

There is, however, I should say, Mr. Congressman, if our plan were carried out—I mean were accepted and were carried out—it would require, in my judgment, some amendments to title I of the Social Security Act.

Mr. SPRINGER. Just in short, substantially what would those amendments provide?

Secretary FLEMMING. I would have to get into the whole plan. But let me put it this way. The plan that we have presented, at least the basic part of the plan, rests back on the same basic philosophy that is reflected in title I, particularly as title I has been amended to include medical services for those who participate in the Federal-State public assistance program.

One portion of our plan—in fact, an integral portion of our plan—would result in quite a major change in the way in which that particular part of the public assistance program would be handled.

Mr. SPRINGER. You are talking about public assistance only?

Secretary FLEMMING. When I talk about title I, that has reference to old-age assistance; yes.

Mr. SPRINGER. Are you talking about old-age assistance?

Secretary FLEMMING. The part I am talking about is the old-age assistance category.

Mr. SPRINGER. Another portion would provide for those on social security above the age of 65 years, or does your plan just encompass all those above 65?

Secretary FLEMMING. Yes; we do not relate our plan to the old-age and survivors insurance program at all.

Mr. SPRINGER. That is what I want to find out.

Secretary FLEMMING. That is right. But our plan is related to the Social Security Act insofar as it relates to title I. But it has no reference to the old-age, survivors, and disability insurance program.

In fact, that is one of the positions that we have made, as you know, very emphatically: that, in our judgment, a program in this particular

area should not be related to the old-age, survivors, and disability insurance program.

Mr. SPRINGER. The reason I raise that is that all the health matters come within the jurisdiction of this committee, and there is one that used to be Health and Science.

Secretary FLEMMING. Right.

Mr. SPRINGER. It is now Health and Safety that comes before this committee.

Have you talked with, or had any of your legal staff talk with, the Department as to where such a bill, if introduced, would go?

Secretary FLEMMING. No; we have not, Mr. Congressman. As you know, we have not proposed any bill for introduction. The Ways and Means Committee, as I think everyone knows, has had under consideration for a long period of time the question of what should be done in this area of the aged.

About 10 days or 2 weeks ago, knowing that we were working on a program, the chairman of the committee, Mr. Mills, asked me whether or not I thought that by such and such a date I would be in a position where I could outline to the committee what we had in mind.

I told him that I thought there was a very good chance of my being in such a position, and I would certainly work toward such a deadline.

I did work toward such a deadline. I had to ask for an extension of 1 day. But within the 1 day, I met the deadline.

And so what I did was to outline to the full membership of the Ways and Means Committee our feeling as an administration as to the best way in which to deal with what we recognize is a very major problem. So that we have not transmitted any formal bill to the Congress either by letter to the Speaker or to the Vice President of the Senate, nor, in fact, have we drawn a formal bill up to the present time. We are continuing our discussions with the Ways and Means Committee. I will resume tomorrow.

As you know, they have got under consideration a number of possible approaches.

Mr. SPRINGER. May I ask you this last question?

Do you in the foreseeable future—and I am going to limit that to 4 weeks—intend, or do you now plan, to present a bill?

Secretary FLEMMING. I really don't know on that as yet. I think a lot will depend on further discussions in the Ways and Means Committee. But we are prepared, of course, to outline to any other committee the basic approach that we believe to be sound.

Mr. SPRINGER. Mr. Secretary, I think it would be extremely important in view of what has already gone before in stated opinion around the Congress that your legal counsel get an opinion insofar as he can at this time from the Parliamentarian or the Assistant Parliamentarian as to where that bill is likely to go.

If it indicates that that bill is most likely to come before this committee, I think it will be well, then, to talk with the chairman of this committee, so that there is some resolving of this between Mr. Mills and the chairman of this committee as to what should be done.

I think this will save a lot of time not only for you, but this committee is going to be very busy if what the chairman tells me is true, and I think it is, until the end of this Congress.

So I merely make that statement because I think it is well to keep in mind.

May I say last, having asked all these questions, I thought your statement was excellent this morning. In the first place, it was short and concise, and we could understand it, and I like that kind of statement.

Secretary FLEMMING. Thank you. I appreciate that.

The CHAIRMAN. I don't want any misunderstanding of the record in view of the comment made by Mr. Springer and the request he made of you.

In the first place, I will say you and I have previously discussed this question and the jurisdiction problem, and I raised with you the same question earlier this morning. We were going to bring that out.

But before I ask you another question on this, there is what is referred to as rule 40 of the Rules of the House of Representatives that provides a proper procedure for the departments and agencies of the Government to present legislation to the Congress.

There have been some questions raised about whether or not that rule has been strictly complied with in the past, but in view of the fact that the Speaker a year or two ago raised it, I must say that insofar as I know, all agencies and departments of the Government have been complying strictly therewith since.

The rule requires you to submit your proposals and recommendations to the Speaker of the House and the President of the Senate and it then becomes the responsibility of the Speaker and the President of the Senate, with the advice from the Parliamentarian, to refer such proposals.

Now, that is the rule, and you or your lawyers can't do anything about it, Mr. Secretary.

Secretary FLEMMING. That is right.

The CHAIRMAN. The Speaker has made it very clear that he expects that rule to be followed. But it does present a rather unusual type of a situation where the Ways and Means Committee—and I don't want to get into any fracas with my own colleague Mr. Mills—as you told me a while ago Arkansas has been keeping you pretty busy recently.

Secretary FLEMMING. That is right.

The CHAIRMAN. I guess maybe that is true; but, nevertheless, as Mr. Springer said, it does pose a very important jurisdictional matter.

And as members of this committee have discussed the matter with me in recent days, it is quite obvious that this committee cannot just sit idly by and see the jurisdiction of this important question taken away by such devious means as trying to propose something as a substitute for a bill that is appropriately before another committee.

Now, we had you scheduled to come here on that day, and the chairman of that committee talked me into letting you come before him, and you expressed that you wanted to be there. Yet, we find that we released you to them and you went down there and presented the problem to them which you ought to have presented up here, because, as I understand, this is a health insurance plan on a grant-in-aid basis, is that right?

Secretary FLEMMING. Well, it is certainly a Federal-State program. I mean a program under which the Federal Government would make grants to the States in order to enable the States to give assistance to the aged under the terms that would be prescribed in the bill.

But, as I indicated in my exchange with Congressman Springer, without trying to get into the middle of any jurisdictional dispute between committees of the Congress, I should in all fairness point out that it would involve some amendments to title I which is the public-assistance title of the social security.

The CHAIRMAN. It involves some amendments to title I only because of compliance——

Mr. KEITH. Incidentally——

The CHAIRMAN. Actually, it is a health insurance plan provided for the States to administer; isn't it?

Secretary FLEMMING. The only thing that makes me hesitate is the use of the technical term "insurance." The basic proposal, as you probably have noticed, is a proposal under which the individual who is not on public assistance could enroll in the plan.

If he did, that certain costs over and above a deductible figure, or 80 percent of certain costs over and above a deductible figure, would be taken care of for him by the State, and the State would draw on a fund that would be set up by Federal-State matching.

The CHAIRMAN. But when he enrolls, he pays so much doesn't he?

Secretary FLEMMING. Under the proposal that we submitted, he would pay what we call an enrollment fee of $24. Now, this does not apply to the public-assistance recipients. They would get all of the benefits of the plan without paying any fee, without being involved in any deductible, and also without being involved in any provision for paying 80 percent of the costs of the benefits.

So that they would be treated differently than the others. This is the part that, of course, would—the fact of the matter is that it represents a considerable step-up in the medical service benefits provision of the Public Assistance Act, so that, as I see it, it probably would involve matters that might very well be within the jurisdiction of both committees, and how that is resolved by a Parliamentarian, I don't know.

I agree with you, Mr. Chairman, I don't think that we should attempt to get the Parliamentarian to resolve it.

The CHAIRMAN. It isn't your responsibility.

Secretary FLEMMING. That is right.

The CHAIRMAN. And we will take care of that ourselves. I would like to get back to this bill here, if we can, before we get too far away.

Mr. SPRINGER. May I just say this one thing. Mr. Secretary, you weren't here in Washington in 1954?

Secretary FLEMMING. I was here, but I was over in another area.

Mr. SPRINGER. A subcommittee from this committee traveled in some 15 countries over a period of some 3 or 4 months to get all the information with reference to the Health Insurance Act of 1954, and I am pretty sure—as I was on the subcommittee at that time and saw these other health acts in all these countries—just about everything that you have in this bill, I am sure, which was encompassed in the 1954 act in a slightly different way to cover all the people mentioned

in your bill, although not in quite the same way, so I am almost positive this is a bill before this committee.

I am talking about the principal portion. It might take some amendments, but I think it is one that will be found to be with this committee.

Thank you, Mr. Chairman.

The CHAIRMAN. Did you want to say anything on that score, Mr. Dingell?

Mr. DINGELL. I just wanted to ask a couple of questions as long as that issue has come up, and I thank the Chair very much for this.

Mr. Secretary, I was very much concerned about the rather slow process of the administration in evolving something along the lines that you were discussing today.

The Forand bill was introduced in the Congress a matter of some 4 year or 5 years ago, and I had sponsored a similar bill previous to the Forand bill.

Secretary FLEMMING. I think the Forand bill was introduced in 1957, if my memory is correct.

Mr. DINGELL. And previous to this time, at any rate, reports of this have been requested from the administration for better than 4 years that I know of and, actually, considerably previous to that, because my dad sponsored a bill that was not too much different.

Secretary FLEMMING. That is right. That was back in 1949, I think.

Mr. DINGELL. His bill was first introduced in the early 1950's, or it may go back into 1949. What I am interested in is this: Here we have a problem that has needed meeting for some while. We have jurisdiction in one committee which has been considering legislation.

You folks downtown come up with a proposal that goes now to—that comes to a very different committee—and I am satisfied it does, because I have legislation not vastly different than yours that comes to this committee.

Don't you think it would be a wise idea for the Department to get some kind of legislative proposal up here to Congress so we can find out just who does have jurisdiction on this matter?

Secretary FLEMMING. Mr. Chairman and Congressman Dingell, may I say this: I don't want to suggest by anything I have said that we will not follow the formal procedure. I have tried to outline just the exact position that I find myself in as far as the Ways and Means Committee is concerned.

In other words, the chairman did not request me to come up with a formal draft of a bill, but he did not ask me to present to the committee the outline of any plan that we might decide on.

We were able to reach agreement on a plan, and I did come up, and I have discussed it with the Ways and Means Committee in response to that request.

Of course, we are working on getting our proposal into legislative language, and certainly, at the appropriate time, that would be made available, and, I would assume, would go through the kind of a process——

The CHAIRMAN. Will you yield? Mr. Secretary, will you submit to this committee the proposal that you submitted to the Ways and

Means Committee together with any additional information that you submit here in the Congress regarding this matter?

Secretary FLEMMING. I will be very happy to.

Mr. DINGELL. Mr. Chairman, I would like to point out to you, Mr. Secretary, that the clock is a very, very harsh master. The present indication is that the Congress intends to adjourn sometime very early in July. If the administration does not move with the greatest speed in getting some kind of concrete legislation up here that they intend to back, we may very well find, instead of concrete legislation, we are going to have just another campaign issue next fall. This problem of health insurance for our aged will be removed from the question of accomplishing something concrete into a heated political forum. I hope that you folks down in the department will act diligently, and see to it that we get something that we can act on rather than to resolve ourselves into a rather bitter partisan wrangle during the fall.

Secretary FLEMMING. Mr. Congressman, might I say that this is the kind of an objective toward which I am personally working. Might I also say that I am spending a great deal of time before the committee that is now considering this matter, and we are responding to all kinds of requests for additional information—for backup material and so on—and responding to it literally almost overnight at times.

We have a staff that is literally working morning, noon, and night, and literally working around the clock and Saturday's and Sundays, in order to put before the committee that is now considering the matter all of the information that they feel they need in order to act on it.

I appreciate the issue that has been raised here, but I think you can also appreciate my position that this is the committee that is considering the matter at the present time; and this is the committee to which I am presenting this information.

But I will certainly be very happy to respond to the chairman's request and present comparable material to this committee.

The CHAIRMAN. Mr. Secretary, I would not want any implication to go by that the mere fact that you submitted your plan up here and got it accepted would eliminate it as a campaign issue.

Mr. DINGELL. I happen to be one man who is interested in getting something done here rather than running around the country campaigning on this issue, and I would like to see something come up here as soon as possible from you folks downtown.

Apparently rather extensive consideration has been given to this, and it would appear to my mind that having given extensive consideration, the actual draftsmanship of a proposal of this sort is a relatively simple matter.

The CHAIRMAN. I think we have discussed this matter with the Secretary. I would like to get back to this legislation because it is getting late.

Mr. DINGELL. I didn't open the question, Mr. Chairman.

The CHAIRMAN. I know, but I don't intend that it go on and on.

Mr. SPRINGER. Mr. Chairman if you would—could I ask, Would you send me a copy of the statement made before the Ways and Means Committee?

Secretary FLEMMING. Yes. Mr. Chairman, suppose we make copies available to the clerk of the committee for distribution to all members of the committee.

The CHAIRMAN. That is precisely what I had in mind when I asked you the question a moment ago.

Secretary FLEMMING. We will be very happy to do that and do it immediately.

The CHAIRMAN. I would like to get back to this subject matter here which is of great concern to us.

I want to ask you the same question with reference to your action against the chicken people on abandoning the use of stilbestrol that was asked by Mr. Springer a moment ago with reference to the banning and seizure of cranberries. Did you follow the same procedure as he outlined to you as required by law?

Secretary FLEMMING. Certainly, Mr. Chairman, I feel that everything we have done in connection with that is in conformity with the law.

Now we did follow a different procedure, as you know, and as I outlined to the committee the last time.

In the first place, in the one case we were dealing with a situation where there was some use of a substance in violation of the law enforced by the Food and Drug Administration.

In this particular instance no one was in violation of the law or any of our findings or of any of our rulings. But some evidence had been made available to us which made us realize that it would be necessary for us to take action.

As I indicated the last time I was here, we asked the interested representatives of the interested parties to come in and discuss the matter with us, and asked them whether or not they would be willing to take some action informally prior to our instituting the formal action.

Commissioner Larrick has referred to that, and of course they did agree, and since then in three instances the formal action has been taken and is now underway. I don't know just when that will be completed.

The CHAIRMAN. Yes. I think the great complaint was not in doing that. It was the manner in which it was done according to the reports which I got from the people involved.

They have advised me that they had people here who pleaded with you and your department not to make the announcement as you did at that particular time because of the effect it would have—that they would voluntarily and were glad to comply with whatever you wanted them to do.

But in making the announcement as it was made at that particular time, it was a blow to the chicken industry.

Secretary FLEMMING. Mr. Chairman, of course I recognize that it is a matter of judgment, and I recognize that some took issue with the final judgment that we exercised.

But in view of the fact that the information had become available, in view of the fact that the information was going to be made public, we felt that being able to say to the public that the manufacturers of the product, the industry, and the retailers had agreed to stop the use of the product in the way in which it was being used—had agreed to take the birds that were involved off the market so that the consumer

could be assured of the fact that what he or she was purchasing was absolutely OK——

The CHAIRMAN. But they did agree voluntarily to take them off the market?

Secretary FLEMMING. There is no question about it, Mr. Chairman.

The CHAIRMAN. And they did so take them off the market?

Secretary FLEMMING. They did, and we so stated, and as you know, I have so stated. I stated then at the time of the initial announcement and repeated it a number of times afterward, in order to make perfectly clear to everybody concerned that what they were buying on the market was OK.

The CHAIRMAN. I might say that I was at that particular time on a duck shoot in Arkansas, and when you made your announcement on television, I was just getting ready to eat a choice chicken that they were serving.

Mr. KEITH. I gather you hadn't shot any duck?

The CHAIRMAN. Well, I want to say, it did not keep me from eating the chicken, even though the announcement was made.

But I did want to raise the same question with reference to the poultry business, because these gentlemen with cranberries up there can't have much luck selling their cranberries unless we have chicken and turkey to go with it.

But back to the proposal in your statement this morning. In the first place you suggested an amendment to the Delaney amendment.

Secretary FLEMMING. That is correct.

The CHAIRMAN. What was that suggestion?

Secretary FLEMMING. Mr. Chairman, as you know in my testimony, both today and January 26, I outlined the substance of that. Apparently the exact wording is not here. I will see to it that it is here so it can be included in the record at this point.

The CHAIRMAN. That is referred to in your statement on page 2.

Secretary FLEMMING. That is correct.

The CHAIRMAN. You said:

> At that time I stated that we believed the Delaney clause should be modified to provide that additives used in animal feed which leave no residue either in the animal after slaughter or in the food product obtained from the living animal be exempt from the provisions of the clause.

Secretary FLEMMING. Right.

The CHAIRMAN. I suppose you would apply that to chickens, too; wouldn't you?

Secretary FLEMMING. Yes, sir.

The CHAIRMAN. You will then provide for the committee what you have in mind as language to meet this policy statement?

Secretary FLEMMING. That is correct.

The CHAIRMAN. Now you also say that the Delaney amendment should not be amended in any other way; is that correct?

Secretary FLEMMING. That is correct.

The CHAIRMAN. Except with reference to Dr. Darby's suggestion?

Secretary FLEMMING. Yes. Of course, that really wouldn't be an amendment to the Delaney amendment. That would really be something that would be included in the bill and would apply both to the Delaney clause or any other matter that might come up.

The CHAIRMAN. That is right. Does that reach the point that Commissioner Larrick referred to a moment ago on a question by Mr. Keith about making information available to what you had called the third party or the injured party?

Dr. LARRICK. No, that would be an entirely different matter than the advisory committees he is talking about. As it is now, if a manufacturer comes to us with a petition in this area, his data would, unless there is a public hearing, be regarded as a private matter, and we would not feel privileged to make it known to the world. The suggestion that Dr. Darby has would provide that we publish the scientific basis upon which we reach these decisions.

The CHAIRMAN. Now the Bureau of the Budget sent up a letter and referred to the fact, Mr. Secretary, that the Delaney approach is unnecessarily stringent in one respect. Where an additive is used in animal foods and leaves no residue in the food after slaughter and does not adversely affect the animal, there is no need to have the proviso.

The Secretary of Health, Education, and Welfare will submit language to modify the Delaney amendment in this regard in the near future.

That is what you just referred to.

Secretary FLEMMING. That is correct.

The CHAIRMAN. Then in your letter of April 11, you suggest that a correction in the provision in title I of the proposed color additive amendment be made.

Secretary FLEMMING. That is correct.

The CHAIRMAN. And you think that is necessary in order to make it conform.

Secretary FLEMMING. Yes. That was as indicated here in the second paragraph. This problem arose out of an inadvertent cross-reference to the subsection on fees and so on. This is simply designed to improve the bill technically.

The CHAIRMAN. The letter of April 18 to the committee is merely along the lines of your statement this morning regarding the arsenic situation?

Secretary FLEMMING. Yes, and this was in response to a request from the committee for background information on this.

The CHAIRMAN. The Department of Agriculture has submitted a letter of April 14. The Department favored, when it testified, amending section 101 of the Senate bill 2197 by adding before the period in line 10, page 3, certain language. Or are you familiar with that?

Secretary FLEMMING. I have the letter in front me, yes.

The CHAIRMAN (reading):

Or any soil or plant nutrient or any materials subject to registration under the Federal Insecticide, Fungicide, and Rodenticide Act.

Do you agree with the recommendations of the Agriculture Department?

Mr. ELLENBOGEN. Sir, may I interpose. There is a later recommendation that this Department and the Agriculture Department worked out jointly which appears in a letter from the Department of Agriculture to you, sir, dated April 14.

The CHAIRMAN. That is what I am reading from. It goes on to say——

Secretary FLEMMING. Yes; the chairman is reading from the letter of April 14. Pardon me, Mr. Chairman, what confused the lawyer there, that later on in this letter the language is suggested to which we have agreed.

The CHAIRMAN. In other words, reading further from the letter:

> Dr. Clarkson stated at that time that the language suggested was preliminary, and that discussions were being held with representatives of the Department of Health, Education, and Welfare.
>
> As a result of these discussions, we are now revising our proposal by recommending that section 101 of S. 2197 be amended by adding a new paragraph 3 on page 3 as follows:
>
> (3) Nothing in subparagraph 1 of this paragraph shall be construed to apply to any pesticide chemical, soil or plant nutrient, or other agricultural chemical solely because of its effect in aiding, retarding, or otherwise affecting, directly or indirectly, the growth or other natural physiological processes of produce of the soil and thereby affecting its color, whether before or after harvest.

Now does this try to resolve the issue which was presented to this committee in hearings by our former colleague from Florida, Mr. Peterson?

Dr. LARRICK. It is my recollection that that was one of his points. At the start of the hearings the people who were concerned with this thought that it could be handled as a matter of legislative history, and then there was some court decision that was handed down that gave them concern, and this simply would mean that you wouldn't include within the color amendment these substances that are ruled out here, and that would take care of some of Mr. Peterson's problem.

The CHAIRMAN. In the presentation to this committee, you have the bill before you, the House bill, on page 10 it was suggested that the first part of the amendment, that is lines 2, 3, and 4, and part of 1, and beginning on line 14:

> If it is found after tests which are appropriate for evaluation of the safety of additives for use in food to induce cancer in man or animal—

and so forth, it has been recommended to us that the first part of that be left out and adopt the latter part. Have you got any comment on that suggestion?

Secretary FLEMMING. Just a minute until I get the substance. The suggestion is that it would read now on page 10, line 11:

> A color additive shall be deemed unsafe and shall not be listed for any use which will or may result in ingestion of all or part of such additive if the additive—

now what is it suggested that should be stricken?

The CHAIRMAN. That that part be stricken, and as I understood it would read:

> A color additive shall be deemed unsafe if it is found after tests which are appropriate for the evaluation, safety—

and so forth.

Secretary FLEMMING. Mr. Chairman, we have looked at a number of suggestions that have been made on the change in the wording. This is one, however, that we haven't looked at. I would like to have the opportunity of considering it with the lawyers before commenting on it, if I may.

The CHAIRMAN. Yes; you may.

Secretary FLEMMING. I would appreciate it.

The CHAIRMAN. Mr. Secretary, I have detained you entirely too long, but I thought it better to go ahead and try to get through instead of having you come back this afternoon. Consequently we have gone on through the noon hour as it is now 1 o'clock.

Secretary FLEMMING. I appreciate very much the opportunity of appearing again. I am very happy to stay until you have concluded.

The CHAIRMAN. We appreciate your cooperation and your presentation here this morning in further reference to this important problem.

It is going to be my intention after other hearings which are scheduled for this week by some of the subcommittees are concluded—if we can get through those hearings, and I hope we can—it will be my intention to have a series of executive sessions at which I hope to get to resolving some of these issues, so any further information that is to be submitted to this committee is going to have to come within the next few days.

Secretary FLEMMING. We will see to it.

The CHAIRMAN. In that regard I am going to hold the record open 5 days for any additional information to be submitted. With the thanks of the committee for your statement and your testimony today and your cooperation in the matter, the committee is now adjourned.

Secretary FLEMMING. Thank you very much, Mr. Chairman.

(The following letter was later received from Secretary Flemming:)

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
Washington, May 13, 1960.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: On May 9, 1960, when I appeared before your committee with regard to proposed color-additives legislation, you requested that we comment on a proposal that has been made for amending the anticancer clause of H.R. 7624. As we understand the proposal, it would change section 706(b)(5)(B)(i) so that it reads:

"(B) A color additive (i) shall be deemed unsafe and shall not be listed, for any use which will or may result in ingestion of all or part of such additive, [if the additive is found to induce cancer when ingested by man or animal,] or if it is found, after tests which are appropriate for the evaluation of the safety of additives for use in food, to induce cancer in man or animal, * * *." (Bracketed material present in original bill, but to be deleted.)

The deletion of the bracketed language from the proposed color-additives bill, and deletion of comparable language from the anticancer clause of the Food Additives Amendment of 1958, in view of the past history of the anticancer clauses, is obviously designed to weaken the anticancer clause and to allow room for the contention that our Department should establish tolerances to permit chemicals in food even though they had been found to induce cancer when fed. This would serve no purpose except to lead to extended litigation on this issue in the courts.

As you know from my testimony on January 26 and again on May 9, 1960, we believe there is no sound scientific basis at this time for establishing tolerances to allow carcinogens to be added to food.

We recommend that the proposed change not be adopted.

Sincerely yours,

ARTHUR S. FLEMMING, *Secretary.*

(The following material was received for the record:)

STATEMENT BY JANE W. HETRICH ON THE BEHALF OF THE NUTRITIONAL STUDY GROUP OF CAPE ARTHUR, SEVERNA PARK, MD.

Mr. Chairman and members of the committee; it has been a privilege to sit in on some of the hearings of the Interstate and Foreign Commerce Committee

recently held regarding proposed legislation dealing with the use of artificial chemical colors in foods, drugs, and cosmetics. The manner in which this has been conducted has reassured me that our fine Congressmen will not be deceived by false security regarding our national health.

Certain industries with their cry of "no harm in a little bit," as voiced at the hearings as well as in newspapers and magazines (such as Feb. 15, 1960, issue of Life magazine), prompts me to submit for the record the following observations of dangerous chemicals in foods:

On an attached sheet I have listed a common menu for one day, just such as you or I might eat. For each food I have listed the chemicals contained therein as indicated on the labels of that food or as commonly known to be used in its production. You will note these 16 everyday food items contain at least 43 different artificial chemical colorings, flavorings, and preservatives. If our imaginary diner should augment his diet with, perhaps, a carbonated beverage or candy bar this would further increase the chemicals ingested. Also an expert in food preparation might know of even more chemicals used in today's food production, but I am just a housewife and know only of those stated by the manufacturer or processor. Nor does this consider any insecticides or antibiotics, although we all know virtually every particle of food now available to us, including meat and milk, contains one or more chemical poisons or drugs of varying degrees of harmfulness.

Now some might say these chemicals are (mostly) not harmful, but we must remember only a few years ago many chemicals were believed not harmful and are now recognized as definitely inciting to cancer and other degenerative diseases. The oft-heard cry that just this "little bit" of chemical surely cannot hurt, even if it is carcinogenic, begins to sound hollow when we consider, on such a simple diet as I have submitted, this "little bit" in perhaps madam's lipstick, becomes not the first but the 44th "little bit" to be ingested in 1 day.

As a representative of a group of intelligent housewives I ask that you please keep these observations in mind when considering this matter of colors in foods, drugs, and cosmetics. If we must be forced to ingest chemicals in our foods, and they are so prevelant it is almost impossibel to avoid all of them, the very least our Congress can do is forbid those know to be harmful.

Food item	Number of chemical additives	Type or variety of additive
Breakfast:		
Tang breakfast drink	8	8 chemicals for coloring, flavoring, and preserving.
Prepared cereal	3	Artificial flavoring, preservative, coloring.
Toast	2	Bleach; calcium propionate (retard spoilage).
Oleomargarine	3	Sodium benzoate; chemical preservative, artificial coloring.
Total	16	
Lunch:		
Lunch meat	3	Sodium nitrate; sodium nitrite; artificial coloring.
Cheese	2	Scorbic acid, preservative; artificial coloring.
Bread	2	Bleach; calcium propionate.
Oleomargarine	3	Sodium benzoate; chemical preservative; artificial coloring.
Relish	2	Alum; citric acid (harmful when not in natural form).
Cookies	3	Artificial color, flavor, preservative.
Orange	2	Artificial color; wax.
Total	17	
Dinner:		
Ham	3	Potassium nitrate; borax; boracic acid.
Potatoes	1	Red dye to make them appear to contain more minerals, and therefore bring higher price.
Mixed vegetables (canned)	1	Artificial flavoring (might also contain artificial coloring).
Mixed fruit salad	2	Artificial coloring; artificial flavoring.
Frozen pie	3	Artificial coloring; artificial flavoring; preservative.
Total	10	
Total for day	43	

STATEMENT OF SIERT F. RIEPMA, PRESIDENT, NATIONAL ASSOCIATION OF MARGARINE MANUFACTURERS

My name is Siert F. Riepma and I am president and treasurer of the National Association of Margarine Manufacturers, a nonprofit trade association organized under the laws of the State of Illinois, with offices in the Munsey Building, Washington, D.C.

The association, which is national in scope, is a typical trade association devoted to a single product—margarine. Its membership includes the following margarine manufacturers, some large and some small, which, collectively, market their product throughout the United States:

Anderson, Clayton & Co. Foods Division, Gibraltar Life Building, Post Office Box 35, Dallas, Tex.
Armour & Co., 401 North Wabash Avenue, Chicago, Ill.
Blue Plate Foods, Inc., Box 13014, Broadmoor Station, New Orleans, La.
The Carthage Creamery Co., 545 North Main Street, Carthage, Mo.
The Cudahy Packing Co., 5002 South 33d Street, Omaha, Nebr.
Durkee Famous Foods, Division of the Glidden Co., 900 Union Commerce Building, Cleveland, Ohio.
J. H. Filbert, Inc., 3701 Southwestern Boulevard, Baltimore, Md.
Kent Products, Inc., Wornall Road at 42d Terrace, Kansas City, Mo.
Kraft Foods, Division of National Dairy Products Corp., 500 Peshtigo Court, Chicago, Ill.
Lever Bros. Co., 390 Park Avenue, New York, N.Y.
The Merchants Creamery Co., 536 Livingston Street, Cincinnati, Ohio.
The Miami Margarine Co., 5226 Vine Street, Cincinnati, Ohio.
Osceola Foods, Inc., Box 389, Osceola, Ark.
Shedd-Bartush Foods, Inc., 14401 Dexter Boulevard, Detroit, Mich.
Sunnyland Refining Co., 3330 10th Avenue, North, Birmingham, Ala.
Swift & Co., Union Stock Yards, Chicago, Ill.
Vegetable Oil Products Co., 401 Canal Avenue, Wilmington, Calif.
Wilson & Co., Inc., Prudential Plaza, Chicago, Ill.

The National Association of Margarine Manufacturers endorses legislation of this type and, in this statement, we desire to point out why this legislation is considered by us to be both necessary and desirable and why we believe that the Congress should enact it into law without delay. I desire also to comment upon, and make some suggestions with respect to, specific provisions of the proposed legislation.

Except in one respect, S. 2197, as introduced in the Senate on June 17, 1959, was identical with H.R. 7624, which was introduced by Representative Harris on June 9, 1959, and referred to the House Committee on Interstate and Foreign Commerce. The exception relates to the provision appearing in section 706(b)(5)(B) of H.R. 7624 respecting the so-called cancer provision. No comparable provision appears in S. 2197 either in the form in which it was introduced or in which it passed the Senate on August 24, 1959. Also, two amendments to the Senate bill as originally introduced were adopted by the Senate Committee on Labor and Public Welfare after consulations by the committee staff, by representatives of the industries concerned, and by representatives of the Food and Drug Administration of the Department of Health, Education, and Welfare. The first of these amendments, which were subsequently adopted by the Senate in passing S. 2197, has the effect of permitting those additives found "safe" by the Secretary of Health, Education, and Welfare, under the procedures set forth in the 1958 Food Additives Amendment, to be also considered "safe" when used as color additives; and the second such amendment has the effect of relieving the Food and Drug Administration from the obligation of requiring the use of certain analytical methods with respect to color additives when, in its opinion, they are not needed.

Save in the respects mentioned, therefore, S. 2197, in the form in which it is now pending before this committee, is identical with H.R. 7624.

The reasons why I believe that it is in the best interest of both manufacturers and consumers of margarine for the Congress to enact this legislation may be summarized as follows:

(1) Margarine manufactured and marketed by the members of the National Association of Margarine Manufacturers is produced and distributed in accordance with both Federal and State laws.

The industry, of course, has a vital stake in a supply of suitable and adequate colors for use in margarine. In 1950, the Congress enacted important new legislation with respect to the manufacture and sale of colored margarine in this country and established a national public policy whereby, insofar as the Federal Government is concerned, the consumers of this country would be assured of a plentiful supply of colored margarine. In all but two of the States, Wisconsin and Minnesota, the laws also established a public policy at the State level whereby consumers may freely purchase and use colored margarine.

The interest of both the manufacturer and consumer in a continuous supply of suitable colors is well stated in the report of the Senate Committee on Labor and Public Welfare, which accompanied S. 2197 (S. Rept. No. 795, 86th Cong., 1st sess., to accompany S. 2197, August 21, 1959, p. 11), where the committee stated, in pertinent part, as follows:

"The use of color in foods, drugs, and cosmetics, though largely of value from the point of view of enhancing the marketability of the articles involved, is, in many cases, also in the consumer's interest and affirmatively desired by consumers. This is obviously so not only in the case of cosmetics, many of which are designed and purchased for the very purpose of imparting color, but also in the case of certain foods, e.g., margarine, where consumers demand artificial color. * * * Thus, it is in the interest of the consumer that the law be changed so as to make available an adequate supply of colors of the safety of which, for particular uses, the consumer can be assured."

For these reasons, the availability of suitable color additives for margarine is important both to the manufacturers and consumers of this product.

(2) In order that, in the future, there may continue to be an adequate supply of suitable colors for use in margarine and in other foods, it is absolutely essential for the Congress to enact remedial legislation such as that proposed in H.R. 7624 and S. 2197. The fabrication of foods by the combination of ingredients for sale and ultimate consumption by consumers is an accepted fact in our economy. Last year, in the 1958 Food Additives Amendment to the Federal Food, Drug, and Cosmetic Act of 1938, as amended, the Congress dealt comprehensively with all food additives other than color additives to fabricated foods, such as margarine. In that important amendment, the Congress adopted the concept that food additives must be pretested for safety before hey are used in foods and, moreover, authorized the Secretary of Health, Education, and Welfare to establish safe tolerances within which certain additives might be used in our food supply.

H.R. 7624 and S. 2197 would, in substantial effect, adopt a similar concept with respect to color additives, thus placing all food additives on the same plane.

Under the present law, a sharp distinction is made between so-called certified colors, which are undefined by the law, and other color additives. Certified colors may not be used in foods unless they have previously been listed by the Secretary of Health, Education, and Welfare as harmless and unless they come from batches of these colors certified by the Food and Drug Administration. But, under the present law, there is no provision for pretesting color additives used in foods which are not classified as certified colors. They may be freely used in foods by the manufacturer, and it is up to the Government to show that they are not safe after they have been used.

Under the provisions of H.R. 7624 and S. 2197, this distinction between certified colors and other colors would be eliminated and a uniform procedure would be adopted whereby no color additive may be used in a food except in accordance with regulations prescribed by the Secretary of Health, Education, and Welfare.

The essential key to the proposed new law is that a color additive must be safe before it is used. H.R. 7624 and S. 2197 spell out, at great length, the criteria which must be followed in determining the safety of the proposed color additive and, like the 1958 Food Additives Amendment, would authorize the establishment of tolerances within the safe limits of which color additives might be used if tolerances are found to be necessary. It is generally recognized that, in the light of the present techniques in the preparation of manufactured food products, such remedial legislation is desirable, and that it would safeguard the public health more adequately than the present law and, at the same time, enable the food industry to utilize advancing scientific knowledge. There is no scientific or other reason for treating color additives differently from other food additives.

(3) The basic provisions of the present law and regulations respecting colors to be added to the food supply were written at a time when the principal colors available for use were of coal-tar origin. However, following the 1958 decision of the Supreme Court of the United States in *Flemming* v. *Florida Citrus Ex-*

change (358 U.S. 153), holding that, under the present law, there is no authority to establish tolerances respecting coal-tar colors which may be used in foods, the Food and Drug Administration of the Department of Health, Education, and Welfare changed its regulations so that certain yellow coal-tar colors theretofore used in the food supply of the Nation are no longer available.

It is important to bear in mind that this action was not taken by the Food and Drug Administration on the basis of any evidence that these coal-tar colors were harmful within the infinitesimally small limits within which they have been used in food products for coloring purposes. Rather, the action was taken because, as a matter of law, the Supreme Court has announced that there is no authority in the present law for the establishment of safe tolerances insofar as coal-tar colors are concerned. Under H.R. 7624 and S. 2197, authority would be vested in the Secretary to establish such tolerances, where needed, just as he already has authority to establish tolerances, where necessary, with respect to the great variety of all other additives governed by the 1958 Food Additives Amendment.

(4) In the years which have intervened since 1938, when the Congress enacted into the law the present coal-tar color provision, giant strides have been made in the production of a variety of colors not then available. Regulation of the use of these newly developed colors, under the provisions dealing with coal-tar colors, is not realistic and is not in the public interest. Under the provisions of H.R. 7624 and S. 2197, these new colors, as well as coal-tar colors, could be used in the food supply if they are found to be safe by scientific experiments and, where necessary, the Secretary would be authorized to establish tolerances for their use. Such a system of regulation is absolutely necessary if the best interests of American consumers are to be preserved. In this connection, it should be pointed out that the Food and Drug Administration of the Department of Health, Education, and Welfare is experiencing considerable difficulty in determining whether some of these newly developed color additives are or are not to be considered "coal-tar colors" within the meaning of the present law. There is utter confusion which would easily be remedied by H.R. 7624 and S. 2197. It does not make sense to spend time and effort in attempting to classify a color as a coal-tar color or not, when the real question of paramount importance is the safety of the color regardless of its classification.

(5) We desire to call particular attention to the desirability of including the provisions of section 203 in H.R. 7624 and S. 2197. In legislation of this importance and complexity, it is important for the Congress to provide for the orderly transition from the old system of regulation to the new system of regulation so that the best interests of consumers in a continued food supply will be preserved and in order to avoid the disruption of orderly manufacturing processes. The purpose of section 203 is to provide for the orderly transition from the old system of regulation to the new system of regulation. Thus, among other things, the Secretary would, during the transitional period of 2½ years following the date of the enactment of H.R. 7624 and S. 2197, be specifically authorized to provide for the continued use, during such period, (1) of any certified or coal-tar color previously listed as harmless and certifiable for use; (2) any other color additive heretofore commercially used and sold, and (3) the color additive known as synthetic beta carotene. The last is a yellow-coloring material used in the margarine industry as well as in the food industry in general. It is recognized as a healthful and nutritious product and is an important source of vitamin A.

I feel that the transitional provisions, just mentioned, are wise and should be enacted without change into the new legislation.

Before concluding this statement, we now desire to comment particularly with respect to specific provisions of the two bills under consideration by this committee.

(1) In the first place, we submit that the two amendments made by the Senate Committee on Labor and Public Welfare to S. 2197 and adopted by the Senate, as summarized above, are desirable and should be adopted. The first of these amendments, with respect to relieving the Food and Drug Administration from the obligation of requiring the use of certain analytical methods when, in its opinion, they are not needed, appears in section 706(b)(5) of S. 2197. The second of the two amendments, permitting those additives found "safe" under the 1958 food additives amendment to be considered "safe" under the proposed color additives amendment, appears in the proviso in section 706(b)(4) of S. 2197. If the House bill rather than the Senate bill is to be reported by this

committee, section 706(b) (4) and (5) (A) of the House bill should be amended to conform to the provisions found in section 706(b) (4) and (5).

(2) Aside from the two amendments just noted, which were adopted by the Senate in passing S. 2197, and which this association favors, the only other difference in the two bills is that H.R. 7624 contains the so-called cancer provision in section 706(b) (5) (B), while no such provision is found in the Senate bill. This association submits that, in this respect, S. 2197 is to be preferred, rather than H.R. 7624. This is true because the basic provisions of both the bills provide that a color additive may be used unless its safety has been proved and tolerances, if needed, are established.

No one favors the using of any color additive which would induce cancer in man. Certainly, if there is any evidence whatever that a particular color additive will induce cancer, its use may be proscribed under the basic provisions of either the House or the Senate bill, which permit the use of a color additive only if its "safety" is proven. Therefore, the so-called special cancer provision appearing in section 106(b) (5) (B) of H.R. 7624 is unnecessary to protect the health of the Nation, and its only real effect actually is to mislead consumers into believing that they secure some protection from this provision which they, in fact, do not.

Aside from the foregoing, the provision is contrary to the whole philosophy of the remainder of the bill, which is to permit the establishment of safe tolerances, where necessary. Furthermore, the provision, as now written, might well be regarded as perpetuating the doctrine announced by the Supreme Court in 1958 in *Fleming* v. *Florida Citrus Exchange*. This doctrine is that the Secretary of Health, Education, and Welfare is without authority to permit the use of a coal tar color, even if the Secretary knows it is safe to permit its use under ordinary conditions of human ingestion, where there is any evidence that the color may be harmful if fed in enormous doses to experimental animals. To overcome such doctrine is one of the reasons why legislation upon the subject is necessary.

I recognize that a similar provision is found in the 1958 food additives amendment, but we do not believe that this establishes a precedent for continuing an undesirable and unrealistic provision such as that which now appears in H.R 7624. I reiterate that no one desires to use any color additive or food additive which actually is unsafe under ordinary conditions of human usage, whether it causes cancer or smallpox. In all candor, I feel compelled to point out that the present so-called cancer provision appearing in the House bill accomplishes no real purpose not otherwise accomplished by the bill, and that, indeed, it provides a basis for potential confusion and deception to consumers.

(3) Section 706(b) (6) of H.R. 7624 and S. 2197 provide, in effect, that the Secretary shall not permit a color additive to be used "if the data before him show that such proposed use would promote deception of the consumer in violation of this act or would otherwise result in misbranding or adulteration within the meaning of this act." Obviously, this particular provision is not related to the "safety" of the use of a color additive in the food supply and, for this reason, logically does not belong in a proposed bill having, as its primary purpose, the adoption of a system of regulation based upon the safety of color additives.

Therefore, the provision could be eliminated as not germane to the rest of the bill, and, on the additional ground that the subject is adequately covered by provisions of the Federal Trade Commission Act.

However, I do not object to the inclusion of the provision in H.R. 7624 and S. 2197 but I do desire to call attention to the fact that the right of the consumers of this country to purchase colored margarine has already been established as a national public policy by the Congress, in 1950, and by the legislatures of all but two of the States. The quotation from the report of the Senate committee accompanying S. 2197, set forth above in this statement, shows that the Senate committee specifically recognized the right of the consumers of this country to purchase colored margarine. Therefore, the provision under consideration should not be understood as giving the Secretary any authority to prohibit the use of colored margarine if the color additive proposed for use therein otherwise meets the standards of safety contained in H.R. 7624 and S. 2197.

(4) Section 706(b) (8) of both bills provides, in effect, that the Secretary may, under certain circumstances, decide that one industry may use a given color while another industry may not. This results from the fact that the bills authorize the Secretary to establish tolerances, if he finds this to be necessary. Then, section 706(b) (8), in effect, provides that, to keep the use of a particular

color additive within such safe tolerances, he may determine which use or uses may be made of the additive to the exclusion of other uses.

Obviously, under this provision, an extraordinary power is conferred upon the Secretary which could result in discrimination among those who desire to use a particular color additive. We feel that the Congress should make it clear to the Secretary that special care should be taken by him in the administration of this provision so as to avoid potential discrimination among competing users of a particular color additive.

I commend the Congress for the attention it is giving to this crucially important legislation, and I urge the Congress to enact it without delay.

MANUFACTURING CHEMISTS' ASSOCIATION, INC.,
Washington, D.C., May 18, 1960.

Hon. OREN HARRIS,
House Interstate and Foreign Commerce Committee,
U.S. House of Representatives,
Washington, D.C.

DEAR MR. HARRIS: We have carefully studied Secretary Flemming's May 9 statement to your committee reiterating the opposition of the Department of Health, Education, and Welfare to proposals for changes in the cancer clause as it would be incorporated in proposed color additives legislation.

In view of Secretary Flemming's continued support of such a clause, we would like to summarize below our position on this important matter.

In our statement of February 10 to your committee, we opposed the inclusion in H.R. 7624 of an inflexible cancer clause which precludes the application of discretion and scientific judgment. We urged that questions concerning safety be resolved by the findings of a group of competent and representative scientists which would review all relevant data and make appropriate recommendations.

It is apparent that the difference between the Secretary's view and our own is not so much a consequence of differing appraisals of the cancer problem as it is the result of our differing views of the way in which scientific questions may best be administered. Once it is acknowledged—as it must be—that man's understanding of carcinogenesis is continuously being improved; that is, that his knowledge is a changing thing, it follows as a necessary corollary that governmental regulation of questions of carcinogenicity should be flexible enough to permit adaptation to such advances in knowledge. The cancer clause is the antithesis of flexibility. This provision, hastily enacted into the Food Additives Amendment of 1958 without serious reflection, imposes absolute statutory bars where flexible administrative controls are needed.

Only yesterday we had the opportunity to examine the report and recommendations of the study group convened by the President's special assistant for science and technology, Dr. George B. Kistiakowsky. The group's principal recommendation was that the Secretary of Health, Education, and Welfare appoint an advisory board of scientists to assist him in the evaluation of scientific evidence on the basis of which decisions have to be made prohibiting or permitting the use of certain possible carcinogenic compounds. We believe that this recommendation is excellent and is entirely consistent with the suggestion we made on February 10 and we particularly commend to your attention the fact that such a board would be composed of scientists from the National Cancer Institute, the Food and Drug Administration, the U.S. Department of Agriculture, "and the scientists outside of Government from a panel nominated by the National Academy of Sciences."

We respectfully urge that you incorporate this proposal in S. 2197, which has been passed by the Senate and which, with the changes we have recommended to your committee, would constitute an excellent basis for wise color additives legislation. Adoption of the recommendations contained in the report of the special panel convened at the request of the President would provide a means of settling many of the perplexing problems which have resulted from the arbitrary prohibition contained in the cancer clause. The rule of reason and scientific judgment would be advanced in this important area of Government regulation.

Very truly yours,

KENNETH E. MULFORD,
Chairman, MCA Food Additives Committee.

RESPONSE OF MANUFACTURING CHEMISTS' ASSOCIATION TO HEW COMMENTS OF APRIL 21, 1960, REGARDING PROPOSED AMENDMENTS TO S. 2197 OR H.R. 7624

I. SCOPE OF BILL

1. Nature, source, or type of action of the coloring material

(c) *Food additives.*—Along with other witnesses, the Manufacturing Chemists' Association proposed that substances which are food additives, the uses of which have been approved by published regulations pursuant to the Food Additives Amendment of 1958, and substances exempt from the food additives amendment because of prior sanction, be exempt from the pending color additives bill.

The Secretary's answer to this proposal is that (1) this would prevent the publication of a complete list of approved as safe color additives and (2) that such substances could be listed by the Secretary promptly under the color additives bill as it now reads. We do not know the reason for the emphasis by the Secretary on having a complete list of acceptable color additives. We know of no demand by the manufacturers or users of color additives for such a list. Furthermore, the Secretary has sufficient authority to publish complete lists of safe color additives as he has done in case of food additives which have prior sanction or are generally recognized as safe under the food additives amendment.

We have reservations regarding the Secretary's statement that he would list substances without procedural burdens upon industry. We are concerned that the administrators of the law may subsequently discover reasons why the color additive bill would prevent this. The proposed color additive bill contains requirements which vary from those of the food additives amendment. For instance there is a reference in the color additive bill for analytical methods to determine the identity of the color additive in food, which requirement is not present in the food additives amendment.

As the Secretary has shown no substantial reason for the deletion of the proposed exemption and as we and others representing industry feel strongly that the failure to give such an exemption will result in useless duplication of effort by industry, we respectfully recommend inclusion of the exemption.

2. Purpose for which a dye material is used

(a) *In general.*—The Manufacturing Chemists' Association proposed limiting the color additives definition to include only those substances which are used "primarily for the purpose of imparting color," leaving substances with other primary purposes under the food additives amendment.

The Secretary makes three arguments against this proposal.

First, he says this would be a step backward from the present coal tar color provisions of the Food, Drug, and Cosmetic Act. It is not clear what he means by the term "backward." We are not proposing that additives used primarily for a purpose other than coloring be exempt from regulation under the act entirely, but that they be dealt with under the food additives amendment where they properly belong.

Second, he repeats the argument for a complete list of color additives which we believe we have already shown to be without merit as (1) we doubt the need for such a complete list and (2) our proposal in no way prevents the Secretary from drawing up and publishing any list felt desirable by him.

Third, the Secretary states that such a definition would impose a heavy administrative and enforcement burden upon the Government. We feel certain that there will be no serious administrative problem as the person who wants to clear a particular use for an additive to food will know the primary purpose of his use and will request action under the proper section of the act. In enforcement, fine lines of distinction will, of course, occur. However, this is always the case in law enforcement. We do not see how any public health hazard could be a consequence. Certainly this is true if the product in question is cleared as safe under either the food additives amendment of the color additives bill. And if it is cleared under neither, a defense to an enforcement action brought under one amendment that the product, instead, was subject to the other amendment would obviously serve no purpose.

3. Substances generally recognized as safe

The Manufacturing Chemists' Association and other witnesses proposed that substances generally recognized to be safe under conditions of intended use be exempt from the color additive bill.

The Secretary again argues that this would prevent a complete list of safe color additives. Again we point out that, to the extent that such a complete list is desired, it can be had, just as the Secretary has listed "generally recognized as safe food additives."

Secondly, the Secretary argues that "generally recognized as safe colors" may, in fact, be unsafe. This is equally the case with regard to generally recognized as safe materials exempt under the food additives amendment. We do not see how the concept is any less sound for colors. Furthermore, we believe the Food and Drug Administration's experience with the general recognition of safety exemption under the food additives amendment clearly indicates no grounds for serious concern. Industry has taken a responsible attitude toward this matter and, as the Food and Drug Administration has pointed out many times, if reason to doubt the safety of a color appears and such information is made known to the relevant scientific community, the generally recognized as safe status may be lost and the product then would be subject to the food or color additive amendment. We submit that this is just as reasonable for colors as it is for other additives to foods.

Thirdly, the Secretary states that the question of what is a color additive cannot rationally be made to depend on whether the additive is generally recognized as safe. It is difficult to see why this provision was regarded as rational by Congress in the case of food additives and could not be so regarded in the case of color additives. The Secretary says that, although the food additives amendment exemption was all right because of the broad sweep with which the amendment would otherwise have covered "salt, vinegar, and natural spices," it would be retrogressive to do the same thing for colors. But natural spices and other common materials may well be color additives and not food additives under the all encompassing definition of color additives in the pending bill, and thus, we believe, the argument is self-defeating.

Finally, the Secretary agrees to automatic listing of substances which have been published as generally recognized as safe food additives. We do not believe that such a listing is a reasonable substitute for our proposal. In the first place, probably more generally recognized as safe substances would thereby be left unexempt. The Secretary has made no effort to list obviously safe food additives, such as sugar and vinegar, and many proposed generally recognized as safe food additives are currently pending. These and many others as yet unproposed for listing will become color additives under the present color additive bill. None of these could thereafter become a "substance exempt from the term 'food additive' because of its being generally recognized by qualified experts as safe for its intended use." Furthermore, we believe that, if a substance is, in fact, generally recognized as safe, it should be exempt whether or not the Secretary agrees that it is generally recognized as safe.

II. SUBSTANTIVE PROVISIONS AS TO LISTING OF COLORS (SEC. 706)

1. Basic provision for listing

The Manufacturing Chemists' Association proposed that section 706(b)(1) begin as follows: "The Secretary shall, by regulation, separately list color additives for use in or on food."

The Secretary agrees that this would be proper as long as "it is clearly understood that the Secretary may not and will not merely list colors by regulation, but, necessarily, also promulgate interstitial regulations providing for the listing, i.e., relating to the conditions and procedures for such listing, interpretations of the law, etc."

This is understood and we, therefore, recommend the adoption of our proposal for the purpose of clarity.

2. Analytical methods requirement

The Manufacturing Chemists' Association proposed the deletion of the words, "identify and" from section 706(b)(5)(D). The Secretary, in his comments does not give his reason why such language is needed in a color additives bill although it was not deemed necessary in the food additives amendment.

He indicates concern over the Government's inability to be sure that color additives are not present in amounts in excess of the established tolerance. We feel that the Secretary should recognize that often it is impossible to determine the identity of a substance in food at the minute level of the established tolerance

and that it should be wholly sufficient for enforcement purposes to be able to show that the additive itself is of such a character that no amount in excess of the tolerance could get into the food.

We believe adequate enforcement tools are provided by the requirement for needed analytical methods, as stated in the food additives amendment, without the addition of the words "identity and," which give us concern.

III. PROCEDURAL CHANGES UNDER PERMANENT PART OF BILL (SEC. 706(d))

2. Time limits for action on petition

The Manufacturing Chemists' Association proposed time limits within which the Secretary shall publish notice of the regulation proposed by the petitioner and the order of the Secretary thereon.

The Secretary agrees to such time limits and proposes slightly different language for such provision (see his enclosure III), with which language we concur.

IV. CHANGES IN TRANSITIONAL PART

4. Proposal to delete section 203(d)(3) (title II)

We feel that a provisional listing for the very purpose of enabling the manufacturer or user to develop scientific data regarding the color should not be denied because the data is not available. There are adequate safeguards for termination of the listing if there is any public health hazard or if the scientific investigations are not pursued in good faith.

V. MISCELLANEOUS

Regarding the proposed cancer clause, the Manufacturing Chemists' Association testimony referred to an article in a scientific journal and stated, "The work reported in this article appears to establish that hard-boiled eggs when fed to mice result in cancer."

The Secretary answered, in part, "Our experts, who are acquainted not only with this article but with the general research going on in the cancer field, advise us that the experiment to which Mr. Mulford refers does not prove that eggs contain a *carcinogenic chemical*." (Emphasis supplied.)

We believe the Secretary has thus emphasized the point that we were trying to make, namely, that the proposed cancer clause may well outlaw perfectly safe foods or food or color additives. This clause is not limited to situations in which there is proof that a carcinogenic chemical is present in the additive. In fact, the clause does not use the word "carcinogen" or "carcinogenic," but rather the "if it is found to induce cancer" language, which is much broader because substances may be used in such a manner as to induce cancer without their being carcinogenic. The hard-boiled egg article was merely cited as an example of this.

STATEMENT OF JOE D. NICHOLS, M.D., ATLANTA, TEX.

I am a graduate of the University of Arkansas Medical School, having received an M.D. degree in 1932. I own and operate a 30-bed general hospital in Atlanta, Tex. I am a past president of the Tri-State Medical Society and for 9 years was councilor of the Texas Medical Association.

The increase in the incidence of cancer in America has reached an alarming rate. The chief cause of death in children under 14 years of age, after accidents, is cancer.

Known cancer-causing chemicals are being added to food in this country. While it may be true that safe doses can be established for many poisons that are absorbed and excreted without residual effects, responsible bodies of cancer experts have repeatedly stated that safe doses cannot yet be established with any confidence for chemicals that produce cancer. Cancer-inciting substances (carcinogens) have a different pharmacological action from most other poisons. They have irreversible effects on cells. The Fifth International Cancer Congress in San Paulo unamiously adopted a resolution against the concept of safe doses for carcinogens.

In 1956 the International Union Against Cancer convened at a symposium on food additives in Rome. This symposium was attended by cancer experts from 40 countries. Our Food and Drug Administration was represented. This meeting specifically concluded that any substance found to induce cancer in any species of animal in any dose should not be approved for use in food.

The Delaney amendment to the food and drug law passed in 1958 prohibits the use of known cancer-causing chemicals in foods. It establishes the principle that a manufacturer must prove a chemical food addiitve safe before it can be used. This is a good and fair law. It is a result of many years of careful study of this problem. The American people deserve the protection given them by the Delaney amendment. It must be kept in the law.

ASHEVILLE, N.C., *January 28, 1960.*

Hon. DAVID MCKEE HALL, Jr.,
House of Representatievs, Washington, D.C.:

Re congressional hearings starting January 26 urge you to bring to the attention of Oren Harris, chairman, Interstate and Foreign Commerce Committee, the need for a 2-year extension in the March 5 effective date of the food and drug amendment. The $18 billion packaging industry, of which we are a part, has been most diligent in its efforts to submit the necessary scientific data to the FDA, but it is physically impossible to complete this work by March 5. We also feel that packaging materials should be recognized as unintentional additives and should not be subjected to the same rigid standards as intentional food additives. We sincerely believe these necessary changes will permit more effective enforcement. We are heartly in support of the purpose of the food and drug amendment and continue to be primarily concerned with protecting the health of the American citizens.

W. K. GRUBMAN,
National Starch & Chemical Corp., American Parboard Division.

NEWTON PAPER CO.,
Holyoke, Mass., January 26, 1960.

Congressman SILVIO O. CONTE,
House Office Building,
Washington, D.C.

DEAR CONGRESSMAN: It is imperative that you use every influence to support H.R. 7624, which is being discussed by the House Interstate and Foreign Commerce Committee this week. This bill covers an amendment on color additives in connection with the Food and Drug Additives Amendment of 1958.

Newton Paper Co. is one of the most important sources of supply of Chocolate layer board used in the packaging of candy. So much confusion and uncertainty has arisen over the status of various colors and chemicals used in the manufacture of this board, that our position is being seriously jeopardized. It should be noted that our chocolate layer board has been put through extensive tests over the past several years by the Institute of Paper Chemistry and by many confectionery companies, and has been found free of any harmful substances.

It is vital, therefore, that proper time be given for further study and clarification of color additives by an extension of the March 5, 1960, deadline date covering materials, in use prior to January 1, 1958.

We have done everything possible by working with our trade association and exerting pressure on our suppliers of colors and chemicals to obtain clearance of these materials as safe, so that we may in turn certify to our customers that our chocolate layer board meets the qualifications of the Food and Drug Additives Amendment of 1958.

If an extension is not granted we may be forced to drastically curtail our production causing undue hardship to our employees. The confectionery industry will also be seriously hampered without chocolate layer board to package their products.

We ask that you give this problem your most serious consideration.

Sincerely,

W. W. NEWTON, *President.*

SUN CHEMICAL CORP.,
New York, N.Y., July 2, 1959.

Hon. OREN HARRIS,
Chairman of the House Committee on Interstate and Foreign Commerce, House Office Building, Washington, D.C.

DEAR SIR: I would like to urge your support of H.R. 7624 Color Additive Amendments of 1959. This bill would amend the Federal Food Drug and Cosmetic Act to authorize the use of suitable color additives in or on foods, drugs, and cosmetics, including maximum tolerances, under which such additives may be used safely.

We are the largest manufacturer of colors used in the cosmetic industry in this country and the passage of this bill is of paramount interest to us in the continuance of this important industry.

Although heartily in favor of the objectives of the bill we respectfully submit the following minor changes designed to clarify and improve its administration.

Section 706(b)(4)C.—We believe this section to be unworkable. We agree with section B that we should be able to determine the quantity of pure pigment intermediates and impurities. However our customers use our pigment in (for example) a lipstick base of secret composition, using as one constituent purchased perfumes of proprietary composition. It is fantastic to believe that suitable analytical methods exist for determining the products of interaction of every constituent of our pigment with every constituent of the perfume. On this basis, eating bread would be suspect. Who knows what are the chemical reactions of every constituent of the lard with every constituent of the flour and yeast. We believe that if everything added to the final product has a history of being safe, and no known reactions produce anything harmful, the final product will be harmless. If any doubt exists, it should be resolved by safety tests of the final product and not by exhaustive analysis.

Section 706(b)5(B).—We object to the emphasis placed on cancer. Of course a color should not be listed if it induces cancer or for that matter any disease or affliction. There is not a shred of evidence that D & C pigments induce cancer. Why cause the users of cosmetics undue anxiety by suggesting that they may be inducing cancer?

In many sections of the bill the need for pharmacology is implied. Nowhere does it say who shall do it. We suggest that the Food and Drug Administration employ their existing facilities, augmented if necessary, for this purpose. We propose to finance this work by fees for the certification service. Thus the consumer would pay in proportion to his use of the pharmacology. We tremble at the thought of setting up scientific committees among units of the industry and in turn having them hire pharmacologists and set up laboratories. There would be times when Food and Drug Administration would feel the necessity of checking our results. They would have to duplicate testing and we would have to pay for the work twice; as manufacturers and as taxpayers.

We hope that these improvements will not impede the progress of this bill toward final passage.

Very truly yours,

ERIC N. BLACKSTEAD,
Vice President.

SUN CHEMICAL CORP.,
New York, N.Y., July 2, 1959.

Hon. KENNETH A. ROBERTS,
Chairman of the Subcommittee on Health and Science of the House Committee on Interstate and Foreign Commerce, House Office Building, Washington, D.C.

DEAR SIR: I would like to urge your suport of H.R. 7624 Color Additive Amendments of 1959. As the largest manufacturer of colors used for the cosmetic industry in this country we feel that it is essential to the continuance of this important industry.

Mr. J. W. Ingram, technical director of our Ansbacher-Siegle Division has already written you and included some minor changes which we feel would clarify the bill, however the objectives of the bill receive our wholehearted endorsement.

May we have your support?

Sincerely,

ERIC N. BLACKSTEAD, *Vice President.*

ANSBACHER-SIEGLE CORP.,
Rosebank, Staten Island, N.Y., June 30, 1959.

Subject: H.R. 7624 Color Additive Amendments of 1959.

Hon. KENNETH A. ROBERTS,
Chairman of the Subcommittee on Health and Science of the House Committee on Interstate and Foreign Commerce, House Office Building, Washington, D.C.

DEAR SIR: This bill would amend the Federal Food Drug and Cosmetic Act to authorize the use of suitable color additives in or on foods, drugs, and cosmetics, including maximum tolerances, under which such additives may be used safely.

Our interest is that of the largest manufactures of colors used for cosmetic in the country.

We are heartily in favor of the objectives of the bill and urge its speedy passage with several minor changes designed to clarify and improve its administration. Several of these changes are listed below.

SECTION 706(b)(4)C

We believe this section to be unworkable. We agree with section B that we should be able to determine the quantity of pure pigment, intermediates, and impurities. However our customers use our pigment in (for example) a lipstick base of secret composition, using as one constituent purchased perfumes of proprietary composition. It is fantastic to believe that suitable analytical methods exist for determining the products of interaction of every constituent of our pigment with every constituent of the perfume. On this basis, eating bread would be suspect. Who knows what are the chemical reactions of every constituent of the lard with every constituent of the flour and yeast. We believe that if everything added to the final product has a history of being safe, and no known reactions produce anything harmful, the final product will be harmless. If any doubt exists, it should be resolved by safety tests of the final product and not by exhaustive analysis.

SECTION 706(b)5(B)

We object to the emphasis place on cancer. Of course a color should not be listed if it induces cancer or for that matter any disease or affliction. There is not a shred of evidence that D. & C. pigments induce cancer. Why cause the users of cosmetics undue anxiety by suggesting that they may be inducing cancer?

In many sections of the bill the need for pharmacology is implied. Nowhere does it say who shall do it. We suggest that the Food and Drug Administration employ their existing facilities, augmented if necessary, for this purpose. We propose to finance this work by fees for the certification service. Thus the consumer would pay in proportion to his use of the pharmacology. We tremble at the thought of setting up scientific committees among units of the industry and in turn having them hire pharmacologists and set up laboratories. There would be times when FDA would feel the necessity of checking our results. They would have to duplicate testing and we would have to pay for the work twice; as manufacturers and as taxpayers.

We hope that these improvements will not impede the progress of this bill toward final passage.

Very truly yours,

J. W. INGRAM, *Technical Director.*

AMERICAN FEED MANUFACTURERS ASSOCIATION, INC.,
Chicago, Ill., March 1, 1960.

Hon. OREN HARRIS,
Chairman, House Interstate and Foreign Commerce Committee, House Office Building, Washington, D.C.

DEAR CONGRESSMAN HARRIS: There are certain aspects of the proposed color-additives legislation (H.R. 7624 and S. 2197) that have considerable significance to the feed industry.

The recently enacted food-additives amendment covers food for both animals and humans. It is true that many feed ingredients are not covered since they

are generally recognized as safe because of common use over a long period of time. The feed industry does not use color additives, as such, to any extent. Any color additives that might be developed in the future for use in feeds would be subject to the food-additives amendment since they would be ingested by the birds or animals.

It is possible, unless specific exemption is granted, that under the present broad definition of a color additive that certain feed ingredients could be considered both a color additive and a food additive. This is unnecessary, and could result in an undue burden and hardship. The food-additives amendment provides ample safeguards to prevent the use of unsafe additives in feed.

As an agricultural industry, we are also very much interested in the long-range implications of the very stringent Delaney "cancer" clause as it is now written and interpreted. Unless some modification is made, progress in the development of new and better agricultural chemicals will be seriously threatened. If this is permitted to happen all segments of our population will suffer. We agree with the testimony presented to you and your committee on February 10 and 11, and trust that the Delaney amendment will be modified to allow for the exercise of scientific judgment and at the same time amply protect the public health.

Yours very truly,

W. E. GLENNON, *President.*

BROWN & COLMAN,
ATTORNEYS AT LAW,
Kalamazoo, Mich., February 11, 1960.

Re proposed color-additives amendment.

Hon. AUGUST E. JOHANSEN,
House of Representatives,
Washington, D.C.

DEAR MR. JOHANSEN: I am writing you in regard to the above amendment on behalf of my client, Kalamazoo Spice Extraction Co., which is engaged in grinding and extracting spices for the flavoring and/or coloring of food. It is our understanding that there are presently being conducted hearings on H.R. 7624, before the House Interstate Commerce Committee, of which the Honorable Oren Harris is chairman. My client has already written to the Honorable Mr. Harris and the purpose of this letter is to enlist your aid in presenting our thinking as effectively as possible, particularly to the committee in its hearing on this important bill.

We are aware of the passage in the Senate of S. 2197.

Under the 1958 Food Additive Amendments, colors derived from natural sources and not classified as coal tar colors come under the same provisions as other natural and synthetic additives. We believe the provisions of this law are intelligently designed to protect the public health, and certification is not required of synthetic or natural products under this law. Rather, it is required that they be recognized as safe by FDA. If manufacturing processes are such as to impart a hazard to health, the law provides for corrective FDA action.

Among the substances which we manufacture, and which might require FDA certification under the proposed act, are paprika, red pepper, turmeric, saffron, and cinnamon. Similarly, chili, grape juice, tomato puree, or beets might require certification if one of the purposes of its use was to impart a color—and certainly FDA could argue that these substances have, as one purpose, the objective of coloring food.

The problem which my clients face is that it would be very impractical to have "batch certification" for natural coloring materials. "Batch certification" is presently required for coal tar colors, and requires the following steps:

(1) Submit a sample of the batch, with a fee to FDA.
(2) Testing by FDA.
(3) Certification of the batch, if the test of the sample is approved.
(4) Sales could then be made.
(5) Record purchases of each sale.
(6) Purchaser must record source of each lot purchased.

The above procedure takes a few months, tying up inventory and increasing market risks. For example, at present, paprika extract is sold during processing.

My client's business is, after all, essentially the processing of agricultural products, and the subject legislation, apparently proposed by the coal tar color manufacturers, attempts to impose the same burdens on agriculture which are

placed on coal tar colors, substances not occurring in nature and potentially hazardous to public health.

We are unaware of any evidence that natural coloring materials commonly used in food have presented any hazard to health, either by themselves, or through their process of manufacture. Certainly, tomato puree appears no more hazardous nor in need of certification than fresh tomatoes. Dried chili peppers or red peppers, when ground, do not appear more in need of batch certification than green peppers appearing in the market. Ground paprika does not appear to present a greater hazard than fresh pimentos; or paprika extract, made by essentially the same process as corn oil, and in no more need of certification than corn oil.

I would be glad to furnish any information you might desire in addition to that set forth in this letter.

I will very much appreciate any means which you could use to present the above views to the committee.

Thank you for your help in this matter.

Very truly yours,

ERIC V. BROWN.

DOUGHBOY INDUSTRIES, INC.,
New Richmond, Wis., April 5, 1960.

Hon. LESTER R. JOHNSON,
House of Representatives,
Washington, D.C.

DEAR MR. JOHNSON: House bill 7624, concerning the use of additives to impart color to food, drugs, and cosmetics, is of great concern to me. It appears that this color additive bill could be construed as to include feed ingredients used in formula feeds for nutritional reasons, but which also may impart a color to the feed.

I feel very strongly that it is most important to clearly separate the color additives amendment from the food additives amendment. Certainly a food additive already given the green light because it has been recognized as safe, or has had previous sanction or approval, should not have to be cleared under a color law. Furthermore, the Delaney amendment is, in the bill's present form, included as part of this legislation.

Basically, we realize, this amendment is being considered to protect public health. However, it seems that imposing a flat prohibition on all substances than can be made to produce cancer when ingested by animals, even if the dosage is a million times that normally ingested by man, is certainly unrelated to actual use conditions. Our American farmer today is being penalized because of the Delaney amendment already in the food additive amendment laws. Several feed additives have been put to severe disaadvantage in use (diethylstilbesterol and arsenicals) because of this amendment with lack of actual scientific proof.

Some of our own suppliers of feed nutrients have closed and curtailed research activities because of the broad implications of the Delaney amendment. They are unwilling to spend years of research work as well as millions of dollars on feed additives only to have them kept off the market because of the inflexible cancer clause.

Our job, Doughboy's job, as a formula feed manufacturer is to supply high quality feeds to help the farmer make more food to feed our exploding population and be able to make a living as he does it. Therefore, we do not want to be "hamstrung" in our attempts to do this by the type of legislation proposed.

All I ask is (1) a return to the Food and Drug Administration of the full right to exercise scientific judgment in determining which food and color additives are safe when used under conditions reasonably related to their intended use. This is the system under which FDA operated successfully until the Food Additives Amendment of 1958 became effective; (2) all feed ingredients ingested by livestock and poultry be subject to review and clearance under the food additives amendment, not under both the color additives amendment and the food additives amendment.

Very truly yours,

DOUGHBOY INDUSTRIES, INC.,
E. J. CASHMAN, *President.*

NATIONAL ASSOCIATION OF FROZEN FOOD PACKERS,
Washington, D.C., February 17, 1960.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
The Capitol, Washington, D.C.

DEAR MR. HARRIS: I appreciate the opportunity to comment on H.R. 7624, relating to the use of color additives in foods, drugs, and cosmetics, on behalf of the National Association of Frozen Food Packers. The association is a nonprofit trade association whose members pack more than 75 percent of the frozen fruits, vegetables, and concentrates marketed in the United States, and a major proportion of the prepared frozen foods produced in this country.

We are deeply concerned that each new legislative proposal for dealing with additives to food has, in its field of application, extended governmental authority beyond that of the preceding proposal. Thus, the food additives amendment, enacted in 1958, was more comprehensive, insofar as Government regulatory powers were concerned, than was the pesticide chemicals amendment, which had been enacted in 1954. The proposed color legislation follows the same pattern of expansion. In the area of regulation of colors in foods, drugs, and cosmetics, the color bill, H.R. 7624, would confer authority upon the Department which exceeds in its scope that granted by the food additives amendment, and as a corollary, would place more restrictions upon the regulated industries than does the food additives amendment.

It is difficult to appreciate why the Department of Health, Education, and Welfare feels that it requires more comprehensive power over business operations in its regulation of color additives than it asked for and received under the pesticide chemicals amendment and the food additives amendment.

It is our hope that your committee will examine H.R. 7624 to determine what regulatory jurisdiction is essential for the Department in order to carry out the legitimate purposes of the proposed legislation, in the light of the experience which the Department has had under the previously enacted additives legislation. It seems apparent to us that the authority which the Department may exercise under the earlier additive statutes is adequate for protection of the public health and, indeed, in some respects, goes beyond adequacy into a field with which the Department should not be concerned at all.

I. THE DEFINITION OF "COLOR ADDITIVE"

(*a*) The titles of the Senate and House bills state their purposes: "to protect the public health" by prescribing the conditions under which color additives "may be safely used." This is also the purpose of the food additives amendment, which is of far greater scope and significance from the standpoint of public health protection than the proposed color legislation would be. Insofar as we know, nobody has suggested that the food additives amendment does not furnish an adequate basis for safeguarding the public in the vast field in which it operates. The Department is apparently satisfied that it is adequate. It is difficult to understand, then, why many food additives—those which are also colors—are to be removed from coverage of the food additives amendment and transferred to the proposed color legislation; and why some colors which are excluded from the coverage of the food additives amendment because they are generally recognized by qualified experts to be safe for use under the conditions of their intended use, are now to be subjected to the burdensome and exceptionally complicated procedural provisions of the color legislation.

This, however, would be the effect of H.R. 7624 if it is enacted with the definition of "color additive" contained in section 101(c) of that bill. That definition includes as a color additive any substance derived from any source which, when added or applied to a food, drug, or cosmetic, or to the human body, is capable of imparting color thereto. There is no limiting factor in the definition other than the "except" clause following subparagraph (B) of the definition, which will be discussed hereinafter.

We propose, therefore, that the definition be amended to exclude from jurisdiction under H.R. 7624, any food additive. This could be accomplished by revising the introductory phrase of section 101(t)(I) so that it would read "The term 'color additive' means a material other than a food additive, which * * *."

Coal tar colors are not regarded by the Department of Health, Education, and Welfare as subject to the food additives amendment. It has long been assumed that many coal tar colors used in food, drugs, and cosmetics require special

treatment by way of batch certification, to assure their safety. Even if we accept that proposition we may nevertheless maintain consistently that colors other than those coal tar colors which require batch certification, should be dealt with like other additives. If batch certification is not necessary for additives other than color additives, it is not apparent why it should be required for the latter (again, granting the exception for coal tar colors). Surely, in the case of foods, color additives from mineral, plant, or animal sources offer no greater hazard to the public health than the vast numbers of other additives from such sources which are used in foods. Such additives would be effectively controlled by the food additives amendment.

The effect of the change which we propose in the definition would be to place all food additives, other than coal tar colors, under the same regulatory scheme. Surely this is a logical approach. We know of no sound reason why colors (at least those other than coal tar derivatives) should be subject to different requirements, such as individual batch certification, from those applicable to other food additives.

If there is a problem of definition of the scope of the term "coal tar color" in the application of the food additives and color legislation, it could be resolved by a suitable provision in H.R. 7624. This course would be far more appropriate, in our opinion, than is that proposed in the bill as it now stands.

(*b*) Even with the change herein proposed, there is no basis that we can see, in a bill offered for public health protection, for the inclusion of any color additive (including coal tar colors), which is known to be safe under the conditions of its intended use. We, therefore, recommend the addition of the following subparagraph (C) to the definition of "color additive":

> "(C) is not generally recognized, among experts qualified by scientific training and experience to evaluate its safety, as having been adequately shown through scientific procedures, or experience based on common use, to be safe when added or applied to a food, drug, or cosmetic, or to the human body or any part thereof;".

This change would be of particular importance if all color additives, including those now subject to the food additives amendment, are to be regulated under the proposed legislation, contrary to the recommendation which we have made.

Even such common and harmless articles as fruit and vegetable juices, and concentrates and extracts of such juices, are comprehended within the term "color additive" as defined in H.R. 7624, as are other concededly safe substances, including those listed by FDA as exempt from the food additives amendment because they are generally recognized as safe for use in foods. Under the Senate bill such substances are deemed safe for listing for food "while there is in effect a published finding of the Secretary" declaring them exempt from the term "food additive" by reason of general recognition of their safety.[1] This provision, however, will not affect color additives which are not designated as exempt from the food additives amendment before the effective date of color additives legislation since, under both the Senate and the House bills, color additives cease to be "food additives" upon the enactment of the color bills. Very few commonly used substances about which there can be no question at all of safety are listed in the announcements of exempt substances published by FDA. Consequently, the provision of the Senate bill in question cannot be expected to give any substantial relief.

In addition to fruit and vegetable juices, some of the other common colors which have not been found and announced publicly to be safe, are carbon black, charcoal, titanium dioxide, chlorophyll, xanthophyll, and annato.

It is true that such colors would be deemed to be provisionally listed because of prior commercial use and, as to such uses, would be exempt from certification requirements.[2] This seems to mean, however, that a concededly safe color used in a particular food prior to the enactment date of the proposed law would be deemed to be provisionally listed and exempt from certification for use only in the particular food in which it was used prior to the enactment date and, presumably, only in the quantities in which it was used in such food. If occasion arises for its use in a different quantity or in another food, the color would be deemed unsafe unless it is listed for the new use by the Secretary and is certified or exempted from certification for such use by a certification regulation.

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[1] Sec. 706(b)(4), as added by sec. 103(b) of S. 2197.
[2] Sec. 203(b)(2) and sec. 203(d)(I)(d). These provisions are considered below.

A formal petition under section 701 of the act would be required to obtain a listing and exemption from certification of any new use of such a color unless FDA should act upon its own initiative as provided in section 701. In any event, a regulation would have to issue listing and exempting the particular use from certification, before the end of any period of provisional listing and exemption from certification; a proposal for listing would have to be published; and any interested person would have an opportunity to object. If there is any objection by a person adversely affected, the regulation would be stayed and a public hearing would be held; perhaps an appeal to the courts would follow. The person "proposing" the use—who in fact may have been using the color for many years—must anticipate that through these procedures costly delays, perhaps litigation, and even an eventual denial of the use of the color may result. The same procedural provisions would apply to new colors, even though they are recognized as safe.

We can see no justification for the establishment of these onerous requirements as a condition of marketing concededly safe colors. If it made sense to exclude safe, commonly used substances from the food additives amendment by the test of general recognition of safety, it makes equal sense to exclude them from color additives regulation by the same test.

c. We propose, also, that subparagraph (B) of section 201(t)(I), which would be added to that section by section 101 of the bill, be revised to read as follows:

> "(B) is added or applied to a food, drug, or cosmetic or to the human body or any part thereof, primarily for the purpose of imparting color thereto;"

and that the "except" clause following subparagraph (B), which authorizes the exemption of materials used solely for purposes other than coloring, be eliminated from the bill.

If the incidental effect of the addition of a substance to food is to impart color, as, for example, where tumeric is used as a condiment, such use would be excluded under the suggested change. Any substance exempted would, however, be subjected to regulation under the food additives amendment, just as it has been since that amendment became effective, unless it were generally recognized as safe by qualified experts.

We cannot see how the factor of "capability" of imparting color has any relevance to the question of classification as between colors and other food additives, as provided in the definition as now written. Moreover, practically all substances are capable of imparting some degree of color.

It will obviously be difficult in many situations, and probably impossible in others, to make a determination whether a material is used solely for a purpose other than coloring, as contemplated in the "except" clause of the definition. Such a determination would too often depend upon subjective factors which we doubt that the Secretary is equipped to evaluate or should be empowered to evaluate. The regulation by which the Secretary would determine his own jurisdiction involves a matter of basic coverage of the legislation. If that matter cannot be resolved informally with the Food and Drug Administration, it should be left to the courts.

We think these changes in proposed section 201(t)(I) should be made regardless of whether the legislation includes colors which are now food additives in the definition of "color additive." The reasons stated for the changes are applicable to both situations.

II. ECONOMIC DECISIONS COMMITTED TO THE DEPARTMENT

Section 706(b) of the bill contains authority for the Secretary to make determinations on economic matters which have no relation to the declared purpose of the bill of safeguarding the public from toxic ingredients in foods, drugs, and cosmetics.

(*a*) Section 706(b)(I) provides for the listing by the Secretary of colors which are "suitable and safe" for use. No tests of "suitability" are established as they are for safety. Consequently the Secretary would be empowered to deny listing of colors for uses which he considers unsuitable without any prescribed restrictions upon the exercise of his authority. This extension of power has no counterpart under the food additives amendment. It is found in the existing provisions of law relating to certification of coal tar colors but, when added to the other extensive grants of authority under H.R. 7624, the scope which it will be given is difficult to predict. The test of "suitability" should be eliminated.

(b) Under section 706(b)(6) the Secretary would be directed not to list an additive for a proposed use if the data before him showed that such use would promote deception of the consumer in violation of the act or would otherwise result in misbranding or adulteration.

Here is a clear enough indication that the listing of concededly safe colors will not follow as a matter of course; and that each use of a color will be scrutinized by the Food and Drug Administration to determine whether it appears to be in conflict with any provision of the act other than the color additives amendment or whether it would "promote deception of the consumer in violation of the act," whatever that generalized catchall may mean.

If FDA refuses to list a color under this provision, the remedy of the manufacturer or shipper of the color is to appeal to the appropriate U.S. Court of Appeals under section 701 of the act, after following the procedures for objection and hearing provided under that section. In such a judicial proceeding the findings of FDA as to the facts are conclusive upon the court if based upon a fair evaluation of the entire record of the administrative hearing. Thus, the burden of proof which, under the basic structure of the statute, has heretofore been upon the Government in the enforcement of the adulteration and misbranding provisions of the act, would effectively be shifted from FDA to the person who proposed to use the additive, since FDA would no longer have to adduce proof of violation by a preponderance of the evidence. In practice, opinion evidence of FDA experts may be expected to play a substantial role in such cases. Here then, is an effective extension of the licensing system to substantial areas of economic adulteration and misbranding of foods, drugs, and cosmetics, coupled with a significant lightening of the requirement of proof by the Government.

A similar provision is, of course, found in the food additives amendment (sec. 409(c)(3)(B) of the act). It does not appear to be germane either to food additives or color additives legislation, which is designed fundamentally to assure the safety of those additives. We must object to such basic changes in fields unrelated to safety, which are contrary to the traditional philosophy of our system of law.

(c) Section 706(b)(7) would authorize denial of the use of a color additive if the Secretary finds that the data before him do not establish that the additive would "achieve the intended physical or other technical effect." This provision also requires that any tolerance be fixed at a level no higher than the Secretary finds to be reasonably required to accomplish such physical or other technical effect. It is not clear what the scope of the Secretary's authority would be under the provision. Is the Secretary to determine whether the shade or tint obtained by the use of the substance is too bright, or not bright enough? If the processor maintains that the coloring achieved is just what he wants is the Secretary to decide whether that intensity of hue would be of no commercial value and therefore may not be used? Surely the exercise of such a business judgment should not be committed to the Secretary.

As a practical matter, if a substance imparts to the articles in which it is used a color or hue satisfactory to the processor it has achieved is intended effect, unless its use was for a purpose other than coloring. In that event the definition of color additive contemplates its exemption from H.R. 7624 upon a determination by the Secretary to that effect. If it is not capable of imparting color at all, it is not a color additive and the Secretary would be without jurisdiction over its use under the terms of the bill as introduced. This, then, is an onerous and potentially mischevious provision, both in the proposed color legislation and in the food additives legislation, where it also appears. It is, in addition, inherently illogical in the proposed color legislation, for the reasons which we have stated. We, therefore, urge the deletion of proposed paragraph 7 of section 706(b) of the act.

(d) Section 706(b)(8) contains authority for the Secretary, where he finds it necessary in the interests of safety to restrict the uses of an additive, to determine for which uses the additive shall be or remain listed or how the aggregate allowable safe tolerances for an additive or additives are to be allocated among the uses proposed. One of the factors which the Secretary is to take into account in determining what restrictions shall be placed upon the uses of an additive is "(a) the relative marketability of the articles involved as affected by the proposed uses of the color additive (or of such related additives) in or on such articles, and the relative dependence of the industries concerned on such uses."

We do not believe that the Department is in a position to make such far-reaching economic decisions or that, in any event, it should be granted authority to do so. The Department should be confined, as we have insisted, to the determination of questions of safety of additives. If the authority to be granted in section 706(b)(8) were appropriate in color legislation, it would be equally appropriate in general food additives legislation. It is not provided in the food additives amendment. It would be out of place there as it is in H.R. 7624. We strongly recommend its elimination.

Similar considerations apply to the factor to be considered by the Secretary of "the availability, if any, of other color additives suitable and safe for one or more of the uses proposed," as provided in section 706(b)(8)(e). This clause, too, should be eliminated.

III. PROVISIONAL LISTING

The scheme of provisional listings and removals from the provisional list is remarkable for its grant of extensive powers to the Secretary without the traditional safeguards of hearings, findings, and judicial review, even when viewed in the light of some of the other broad authorizations of the bill which have been discussed.

Section 203(d)(2)(A) provides that "Regulations under this section shall, from time to time, be issued, amended, or repealed by the Secretary without regard to the requirements of the basic act * * *." This means that notice, hearing, and judicial review are not required for delisting color additives now in commercial use which are provisionally listed (or deemed provisionally listed) under other provisions of section 203. If, in the judgment of the Secretary such action is necessary to protect the public health, he may "forthwith" terminate a provisional listing (sec. 203(d)(I)(E)). Not only does this extreme grant of unencumbered authority depart from the basic pattern of the Food, Drug, and Cosmetic Act and the food additives and pesticide chemical amendments, but it is not consistent with the fundamental concepts of fairness in administrative regulation which are established in our legal system. It provides none of the protection against arbitrary action affecting substantial property interests in provisional listings, which are afforded by the provisions of section 706(d) of the bill with respect to new colors. Section 706(d) has the effect of incorporating the procedural and judicial review provisions of the basic act and the food additives amendment. Those provisions should also be made applicable to regulations under section 203(d)(2)(A).

IV. THE CANCER CLAUSE

The so-called Delaney clause, which has been adapted for H.R. 7624 from the food additives amendment, is the final provision to which we shall refer. It is found in section 706(b)(5)(B) of the bill.

We know of no substances used in the processing of frozen foods which might be affected by the cancer clause. We are certain that no freezer would knowingly use in frozen foods a substance which might induce cancer in human beings. We are persuaded, however, that the presence of this hastily adapted provision in the food additives amendment, and its enactment in H.R. 7624, constitutes a disservice to the cause of basic and practical research in agricultural and other chemical agents which are today essential for use in foods, drugs, and cosmetics. There has been impressive testimony before your committee to this effect.

Moreover, the per se interpretation given to the Delaney clause by the Department of Health, Education, and Welfare deprives the Food and Drug Administration of the right to exercise scientific judgment in evaluating the safety of useful chemicals which, but for the Delaney clause, might be cleared for use in foods without any hazard to the public health. If there is hazard in the use of an additive, we are convinced from experience with, and observation of the operations of FDA over the years, that its use will not be permitted whether the danger which is involved is from cancer or any other disease condition. If it were necessary to ban from use, additives which induce cancer in animals, without regard to the concentrations or other conditions of their use, it would seem to us that it would also be necessary to prohibit, at the least, the use of many other additives which induce diseases in animals whose causes in human beings we do not know or of which we are uncertain. The ultimate reach of such a doctrine could not be forseen.

The food additives amendment was unanimously adopted by your committee in 1958 without the Delaney clause. The Senate passed the food additives bill

without the Delaney clause and has adopted S. 2197, the companion bill of H.R. 7624, without that provision. The basic approach of both the color and food additives legislation cannot be squared with the Department's concept of the cancer clause. Conditions of use in both cases, as well as under the pesticide chemicals amendment, are the basic element in the determination of safety and the cancer clause prohibits the consideration of any such factors. We urge that, in adopting color additives legislation, this committee return to the basic philosophy underlying this and the other additives legislation which has been enacted by the Congress.

CONCLUSION

We have recommended the following changes in the bill—

(1) (a) The revision of the definition of "color additive" in section 101(c) of the bill to exclude any food additive as defined in section 201(s) of the Federal Food, Drug, and Cosmetic Act.

(b) The inclusion in the definition of a new subparagraph (C) to exclude from coverage of the bill substances which are generally recognized as safe under the conditions of their intended use.

(c) The revision of subparagraph (B) to limit the application of the bill to materials used "primarily for the purpose of imparting color," and the elimination of the "except" clause following the present subparagraph (B).

(2) The elimination of those provisions authorizing economic determinations by the Secretary, viz, (a) the test of "suitability" for use in section 706(b)(I); (b) section 706(b)(6); (c) section 706(b)(7); and (d) section 706(b)(8)(A) and (C).

(3) Inclusion of procedural safeguards in the scheme of provisional listing, as provided for clearances for new color additives or new uses of such additives.

(4) Elimination of section 706(b)(5)(B), the cancer clause.

With these changes, the bill would, we believe, be fully adequate to protect consumers against hazards which may result from the use of color additives in foods, drugs, or cosmetics.

Respectfully submitted.

LAWRENCE S. MARTIN,
Secretary-Manager.

VIEWS OF THE CENTRAL SOYA CO.

In principle, we respectfully request your careful consideration of these three points:

1. A return to the Food and Drug Administration of the full right to exercise scientific judgment in determining which food (feed) and color additives are safe when used under conditions reasonably related to their intended use.

2. Feed ingredients ingested by poultry and livestock should be subject to review and clearance under only the food additives amendment (not both food and color additives amendments).

3. If the Delaney clause must be included it should be changed to read: "A color additive (or food additive) shall be deemed unsafe * * * if the additive is found *in amounts and under conditions reasonably related to the intended use* to induce cancer when ingested by man or animal."

The addition of the italicized clause would permit scientific judgment in evaluating new additives but would still protect the public.

Finally, the Delaney amendment stifles research in agriculture and works against the general public. Properly used chemicals and additives developed through research have significantly contributed to feeding our people abundantly, economically and safely.

Respectfully yours,

HAROLD W. MCMILLEN.

ANIMAL HEALTH INSTITUTE,
Des Moines, Iowa, March 30, 1960.

Hon. OREN HARRIS,
House of Representatives,
Washington, D.C.

DEAR MR. HARRIS: Because of the overall significance of the current deliberations of the Committee on Interstate and Foreign Commerce, House of Repre-

sentatives, which is considering color additives legislation, the Animal Health Institute wishes to express its views on H.R. 7624 and S. 2197.

The Animal Health Institute is a trade association whose members are engaged in the production and/or sale of biologics, pharmaceuticals, or allied products for veterinary use. The current list of members is attached hereto. The purposes of the Animal Health Institute include the encouragement of production of pure, safe, and efficacious products intended for use in animal health and nutrition, the encouragement of basic and applied research in the development of new and better products for animal agriculture, and the encouragement of safe and efficient methods in the production, packaging, transportation, and storage of such products.

The Animal Health Institute is interested in color legislation to insure an adequate supply of colors for use in veterinary drugs. Among other things, colors are used in veterinary drugs which are sold to feed manufacturers as an aid in determining whether the drugs have been adequately and properly dispersed throughout finished feeds.

Comments on the proposed color additives legislation will be limited to section 706(b)(5)(B) of H.R. 7624, the so-called cancer clause. No equivalent clause appears in S. 2197.

A similar clause appears in section 409(c)(3)(A) of the Federal Food, Drug, and Cosmetic Act as amended by the food additives amendment of 1958. Experience under the food additives amendment of 1958 indicates that the effect of this clause may be to seriously curtail research and the development of new products in the field of animal health, with resulting impairment of our ability to meet the food needs of a rapidly growing population.

The Animal Health Institute is convinced that the use of additives at safe levels is essential to insure adequate production of high quality products from farm animals. One of the purposes of the food additives amendment of 1958, in fact, was to advance food technology by permitting the use of food additives at safe levels. Yet the cancer clause has already been invoked to bar additional approvals for valuable products long used in animal feeds and considered to be absolutely safe under conditions of use. The basis for these actions is totally unrelated to the use of these substances and constitutes a negation of scientific judgment in the evaluation of chemical additives.

Furthermore, the cancer clause as presently worded inhibits the application of scientific judgment in evaluation of additives which are not even demonstrated carcinogens. Administrative decisions have already been made in the name of the cancer clause adversely affecting medicated animal feeds to the detriment of the farmer—even in the absence of any evidence that they have the capacity to produce cancer. The Animal Health Institute feels that the flat prohibitions contained in this clause should not be permitted to apply to products which have not been found by evidence considered reliable by qualified experts to proximately induce cancer.

However, to restore scientific judgment to the cancer clause, it is necessary to limit its operation so as to provide that approval for an additive shall be withheld if it is found to induce cancer when ingested by man or animal "in an amount and under conditions reasonably related to the intended use." This amendment is consistent with the fundamental principle that substances which are without hazard to man or animal under conditions of use shall be permitted.

The Animal Health Institute urges that such an amendment be added to section 706(b)(5)(B) of H.R. 7264. It is requested that this letter be inserted in the record and made part of the transcript of the hearings of the Committee on Interstate and Foreign Commerce pertaining to color additives legislation.

Sincerely,

D. L. BRUNER,
Executive Secretary.

MEMBERSHIP LIST, ANIMAL HEALTH INSTITUTE

Abbott Laboratories, North Chicago, Ill.
American Cyanamid Co., 30 Rockefeller Plaza, New York, N.Y.
American Serum Co., 2117 Leech Avenue, Sioux City, Iowa.
Anchor Serum Co., 2400 Frederick Avenue, St. Joseph, Mo.
Anchor Serum Co. of Indiana, 1101 Kentucky Avenue, Indianapolis, Ind.
Anchor Serum Co. of Minnesota, Shippers Club Building, South St. Paul, Minn.
Armour Pharmaceutical Co., Box 511, Kankakee, Ill.
Beckton, Dickinson & Co., Rutherford, N. J.

Bio Ramo Drug Co., Inc., 325 West Baltimore Street, Baltimore, Md.
Chemo Puro Manufacturing Co., 150 Doremus Avenue, Newark, N.J.
Ciba Pharmaceutical Products, Inc., Summit, N.J.
Colorado Serum Co., 4950 York Street, Denver, Colo.
Corn States Laboratories, 1124 Harney Street, Omaha, Nebr.
Cutter Laboratories, Fourth and Parker Streets, Berkeley, Calif.
Dawe's Laboratories, Inc., 4800 South Richmond Street, Chicago, Ill.
Delaware Poultry Laboratories, Inc., Millsboro, Del.
Dorn & Mitchell, Post Office Box 999, Opelika, Ala.
Dow Chemical Co., Midland, Mich.
Drug Topics, 155 East 44th Street, New York, N.Y.
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
Farm Journal, Inc., Washington Square, Philadelphia, Pa.
The Fox Co., Inc., Newfield, N.J.
The Gland-O-Lac Co., 19th and Leavenworth Streets, Omaha, Nebr.
Haver-Lockhart Laboratories, Post Office Box 676, Kansas City, Mo.
Hazelton Laboratories, Box 30, Falls Church, Va.
Hess & Clark, Inc., Ashland, Ohio.
George H. Lee Co., 4175 Beck Avenue, St. Louis, Mo.
Dr. LeGear, Inc., 4161 Beck Avenue, St. Louis, Mo.
Eli Lilly & Co., Indianapolis, Ind.
Magnus, Mabee & Reynard, Inc., 16 Desbrosses Street, New York, N.Y.
Mallinckrodt Chemical Works, Second and Mallinckrodt Streets, St. Louis, Mo.
Merck & Co., Inc., Rahway, N.J.
New York Quinine & Chemical Division, 100 Church Street, New York, N.Y.
Norwich Pharmacal Co., 17 Eaton Avenue, Norwich, N.Y.
S. B. Penick & Co., 100 Church Street, New York, N.Y.
Peters Serum Co., 1601 Genesee, Kansas City, Mo.
Prentiss Drug & Chemical Co., Inc., 101 West 31st Street, New York, N.Y.
Research Laboratories, Inc., Box 990, St. Joseph, Mo.
I. D. Russell Co., 2463 Harrison, Kansas City, Mo.
Dr. Salsbury's Laboratories, Charles City, Iowa.
Smith Kline & French Laboratories, Philadelphia, Pa.
E. R. Squibb & Sons, 745 Fifth Avenue, New York, N.Y.
Sterwin Chemicals, Inc., 1450 Broadway, New York, N.Y.
Successful Farming, 1716 Locust, Des Moines, Iowa.
Vet Products Corp., 1522–24 Holmes Street, Kansas City, Mo.
Vitamins, Inc., 809 West 58th Street, Chicago, Ill.
Wallerstein Co., Wallerstein Square Mariners Harbor, Staten Island, N.Y.
Watt Publishing Co., Mount Morris, Ill.
T. C. Wheaton Co., Millville, N.J.
Whitmoyer Laboratories, Inc., Myerstown, Pa.
Wilke Laboratories, Inc., Box 2494, Memphis, Tenn.

KALAMAZOO SPICE EXTRACTION CO.,
Kalamazoo, Mich., February 1, 1960.

Hon. OREN HARRIS,
Chairman, House Interstate and Foreign Commerce Committee,
House of Representatives,
Washington, D.C.

DEAR MR. HARRIS: We are engaged in grinding and extracting spices for the flavoring and/or coloring of food. We therefore have a substantial interest in the legislation which you are considering as H.R. 7624, commonly referred to as the color additives bill.

It is our understanding that the bill as originally presented to Congress was substantially that recommended and drafted by the coal-tar color trade association and that its key provisions remain unmodified. These provisions are designed to make all colors equal, regardless of source, and regardless of the potential hazards to the public, by authorizing FDA to require certification for any substance used to color food.

Among the substances which we manufacture, and which might require FDA certification under the act, are paprika, red pepper, tumeric, saffron, and cinnamon. Similarly, chili, grapejuice, tomato puree, or beets might require certification if one of the purposes of its use was to impart a color—and

certainly FDA could argue that these substances have, as one purpose, the objective of coloring food.

Under the 1958 food additives amendment, colors derived from natural sources and not classified as coal-tar colors come under the same provisions as other natural and synthetic additives. We believe the provisions of this law are intelligently designed to protect the public health, and certification is not required of synthetic or natural products under this law. Rather, it is required that they be recognized as safe by FDA. If manufacturing processes are such as to impart a hazard to health, the law provides for corrective FDA action.

The subject legislation proposes to draw a distinction between colors, regardless of source, and all other food components, because of some unsavory association with food colors in the past. We submit that any unsavory association is with the coal-tar colors and the policies followed by their manufacturers, and not with natural colors per se, or grapejuice, or tomato puree. We do not see any advantage, except to coal-tar manufacturers, in imposing added and pointless burdens upon natural coloring materials and foods. If the experience of FDA shows that some coal-tar colors are sufficiently safe and that certification is not required, it would be better to lighten the burden on them, by modifying the coal-tar color law to make certification discretionary, than to make a new law penalizing all colors for the benefit of those which may be unsafe.

Although the argument is presented that a color, because of its natural source, is not per se safe, any lack of safety is adequately handled by the food additives amendment. If this amendment does not protect against an unsafe natural color, it cannot protect against other unsafe natural or synthetic additives.

We are unaware of any evidence that natural coloring materials commonly used in food have presented any hazard to health, either by themselves, or through their process of manufacture. Certainly, tomato puree appears no more hazardous and in need of certification than fresh tomatoes. Dried chili peppers or red peppers, when ground, do not appear more in need of batch certification than green peppers appearing in the market. Ground paprika does not appear to present a greater hazard than fresh pimientos; or paprika extract, made by essentially the same process as corn oil, any more in need of certification than corn oil.

To apply certification procedures to any of the products mentioned in the above paragraph is a direct implication that any and all foods and food additives need batch certification to protect the public health. If such an assertion were made, it would be considered ridiculous. It is our opinion that certification provisions for any of the above substances are equally out of place.

We cannot believe that your committee or the Congress believes that batch certification of certain spices or spice extracts, such as paprika, or any and all agricultural products, is necessary in the public health. We hope that you will not place a pointless burden on agriculture and agricultural processing industries for the sole purpose of aiding the coal-tar color manufacturers.

If possible, I would appreciate your placing this letter in the record of your committee, and should be pleased to offer testimony at your convenience if anything might be gained by a fuller expression of the thoughts contained herein.

Respectfully yours,

KALAMAZOO SPICE EXTRACTION CO.,
PAUL H. TODD, Jr., *President.*

KALAMAZOO SPICE EXTRACTION CO.,
Kalamazoo, Mich., March 28, 1960.

Subject: Color additives bill (referred to herein as the color bill).

Hon. OREN HARRIS,
Member of Congress,
House Office Building,
Washington, D.C.

DEAR MR. HARRIS: Thank you your letter of March 17 and the subsequent correspondence with our counsel, Mr. Eric V. Brown.

In accordance with the suggestion contained in your letter to Mr. Brown under date of March 18, we would appreciate the incorporation of this statement in the committee record:

1. PROPOSAL

That the bill be rephrased to omit the part enclosed in black brackets.

"Sec. 101 * * *

"(t) (1) The term 'color additive' means a material which—

"(A) is a dye, pigment, or other substance made by a process of synthesis or similar artifice, [or extracted, isolated, or otherwise derived, with or without intermediate or final change of identity,] from a vegetable, animal, mineral, or other source, and * * *"

and after paragraph (B) of this section, add the phrase printed in italic:

"except that such term does not include any material which the Secretary, by regulation, determines is used (or intended to be used) solely for a purpose or purposes other than coloring *or any material which is directly derived from a vegetable or animal source.*"

2. REASONS FOR PROPOSED CHANGE

(*a*) *Background*

The 1958 Food Additives Amendment to the Federal Food, Drug and Cosmetic Act gives jurisdiction to FDA to control any substance which is a "food additive" within the meaning of that law. Among such substances are natural spices, extracts thereof, and other natural coloring materials such as extracts of carrots and beets. It appears that, as to such substances, the public health is adequately protected by the provisions of the food additives law, and that further restrictions are not required in the interest of public health.

(*b*) *Definition*

The color bill defines a "color additive" as any material capable of imparting a color to a food, except if the material is used solely for a purpose or purposes other than coloring. Under this definition, not only "food additives" such as spices, but foods themselves such as tomato puree and dried beets, would be considered "color additives."

The 1958 Food Additives Amendment does not apply to foods, but only to "food additives." We submit that the purpose of the color bill is similar and that food substances used to impart color to the products to which they are added are not intended to be covered.

The color bill provides that a "color additive" shall be deemed to be suitable and safe if it is not a "food additive" as defined in section 201(s). Since a food such as dried beets or carrots is not a "food additive" under section 201(s), it will not be deemed suitable and safe for listing unless the requirements proposed by section 706(b) are fulfilled; such requirements appear to be intended as safeguards against toxic substances in synthetic colors and not as applying to natural foods.

3. DISCUSSION

In view of the above considerations, we believe that the scope of the color bill would be improved by modifying the definition of the term "color additive" in section 101 as above provided. This modification would remove agricultural products or derivatives thereof from the scope of the color bill and leave them under the food additives amendment or as foods; they would not be listed as a "color additive" and batch certification would not be a potential requirement for such natural foods.

It appears to us that these modifications would have the following effects:

1. Condimental substances such as ground red pepper and paprika, and extracts thereof, could not be included in the definition of a "color additive" and would remain under the food additives amendment.

2. Colors derived from agricultural products classified as foods, like carrots and beets, would not be considered "color additives" but would come under the food additives amendment. The term "color additive" would not have to be a part of the label declaration of foods containing such substances, but the name of the food itself would be adequate to designate the source of the color.

3. It is not enough to say that under the color bill as proposed, FDA would have discretion to eliminate the requirement of batch certification from such natural foods. Whenever a Government agency has discretion to include or exclude a product from its scope, it tends to include rather than exclude such

product. The interests of public health do not require this protection. The interests of the industry require that this possibility be eliminated.

We greatly appreciate this opportunity of having our viewpoint considered by your committee.

Very truly yours,

KALAMAZOO SPICE EXTRACTION CO.,
PAUL H. TODD, Jr., *President.*

WALNUT GROVE PRODUCTS CO., INC.,
Atlantic, Iowa, April 6, 1960.

Hon. BEN F. JENSEN,
House of Representatives,
Washington, D.C.

DEAR BEN: The Interstate and Foreign Commerce Committee of your House is considering legislation amending the Food and Drug Act with a bill known as the color additives amendment, H.R. 7624. Although you do not serve on this particular committee, Ben, we want to express our opinions to you in regard to this legislation and hope you will give them your due consideration and perhaps will pass them on to your fellow Congressmen.

This bill is so worded that it can be applied to any substance added to animal feed regardless of whether or not it was so added to affect color. In the bill a "color additive" is defined as "a substance * * * when added * * * to a food * * * is capable * * * of imparting color thereto." Color includes black, white, or intermediate grays. As virtually any substance when added to a feed imparts some degree of color to the final product, the scope of this amendment is extremely broad and, if passed as it is now worded, will be needlessly burdensome to the feed industry.

It is suggested that the bill be amended to state that a color additive "does not include a food additive or any material which the Secretary, by regulation, determines is used (or intended to be used) solely for a purpose or purposes other than coloring."

H.R. 7624 contains a cancer clause more restrictive than the Delaney clause in the Food Additives Amendment of 1958, and like the Delaney clause it prevents the exercise of scientific judgment by the Food and Drug Administration in the evaluation of all pertinent data. We believe the protection of the public health to be a paramount consideration; however, we do not believe that the interests of the public would be jeopardized by the exercise by the Food and Drug Administration of scientific judgment in evaluating all pertinent data. Therefore, we contend the cancer clause of the color additives bill should be amended to read in part as follows:

"A color additive * * * shall be deemed unsafe * * * if the additive is found *in amounts and under conditions reasonably related to the intended use* to induce cancer when ingested by man or animal."

The italic portion is the only change we suggest in this clause. This would not take any power away from the Food and Drug Administration and would still require that the safety of the food additive be proven by the manufacturer.

In addition, Ben, we urge this same amendment be made to the Delaney amendment to the Food Additives Act of 1958. However, the point to be made at this moment is to not allow the same mistake made in the Delaney amendment to be made in regard to the color additives amendment.

Finally, the bill provides that the color additives may be listed for use if they are "suitable and safe." If the bill is a public health measure, the determination of safety should be sufficient, and questions of suitability should not be made matters of administrative determination but should be left up to the manufacturer.

This color additives amendment is of great concern to us at Walnut Grove as it is, I am sure, to all well-informed feeders of livestock. New ideas in research and new theories of animal nutrition have been drastically thwarted because of the confusion existing after the adoption of the food additives amendment. The broad scope of the color additive amendment will only multiply the existing confusion to the damage of not only the feed industry but farmers here in the Seventh Congressional District and elsewhere. Your efforts in bringing

these facts to the consideration of your fellow Representatives will be sincerely appreciated.

Sincerely yours,

WALNUT GROVE PRODUCTS CO., INC.,
DICK L. JENSEN, *General Counsel.*

THE KANSAS STATE BOARD OF HEALTH,
Topeka, Kans., April 28, 1960.

Hon. OREN HARRIS,
Chairman, House Interstate and Foreign Commerce Committee,
Washington, D.C.

DEAR MR. HARRIS: Attached is a copy of a resolution adopted by the Kansas Board of Health relating to the subject of color additives for foods.

We respectfully request that this resolution be made a part of the record of the hearings on color additive legislation now pending in the House.

Yours very truly,

EVAN WRIGHT,
Director, Food and Drug Division.

A RESOLUTION ON CARCINOGENS IN FOODS, ADOPTED BY THE KANSAS STATE BOARD OF HEALTH, MARCH 11, 1960

Whereas the problem of chemical additives in foods is one of the great public health issues of our times; and

Whereas the interests of consumers were significantly compromised in 1959 when the Food, Drug, and Cosmetic Act was by amendment stripped of the so-called per se principle, which had since 1907 prohibited the setting of tolerance for toxic and deleterious substances in food unless they were actually necessary in processing or production; and

Whereas this loss was partially offset, at the 11th hour, by incorporation into the above amendment of an absolute prohibition on the setting of tolerance for substances known to produce cancer when ingested by man or animals, a prohibition which has come to be known as the Delaney amendment; and

Whereas the Department of Health, Education, and Welfare has declared and made evident its intention to enforce the prohibitions of the Delaney amendment, and to press for inclusion of its principle in future food, drug, and cosmetic legislation, particularly as related to the use of artificial colors; and

Whereas the directness and vigor of the Department's present approach are in refreshing contrast to its attitudes of recent years, which have appeared to be unduly sensitive to the financial interests of the food industry and somewhat callous to the health interests of the consumer; and

Whereas the present activity of the Department is of great assistance to the Kansas State Board of Health in the education of the public on matters dealing with the adulteration and contamination of foodstuffs, and in the enforcement of the Kansas pure food, drug, and cosmetic laws: Now, therefore, be it

Resolved, That we, the Kansas State Board of Health, go on record as approving of an absolute prohibition of chemical additives known to be carcinogen in foods, drugs, or cosmetics, believing such a principle to be only common prudence in our present state of ignorance of the causative mechanism of cancer, and believing such a principle to be practical and enforcible within the existing structure of Federal and State controls; and be it further

Resolved, That we warmly commend the Department of Health, Education, and Welfare, and the Food and Drug Administration for their courage and integrity as shown in recent actions with regard to cranberries and other foodstuffs adulterated or contaminated by carcinogenic substances.

UNIVERSITY OF MISSOURI,
DIVISION OF AGRICULTURAL SCIENCES,
Columbia, March 15, 1960.

Senator THOMAS C. HENNINGS, Jr.,
Senate Office Building,
Washington, D.C.

DEAR SENATOR HENNINGS: Citizens of the United States are supplied regularly with the most abundant supply, the greatest variety, and most wholesome food of any nation, and as a consequence are the best nourished people on earth.

This food supply is made possible by the combined efforts of industries which manufacture equipment and materials used by farmers in the production of crops and animals, and by other industries that process and distribute farm products to consumers. The combination of farm production with the manufacturing and processing industries has attained its highly effective state through applications of research and experience to the many complex problems involved.

A substantial and essential segment of this complex food-producing structure consists of the contributions of the chemical industry. Chemical products essential to farm production include plant foods, hormones, enzymes, fungicides, herbicides, and insecticides, which enable a relatively small percentage of total population to produce the quantity and quality of farm products required by the people of the Nation.

Many substances, whether occurring free in nature or produced by industry, are useful to man when properly controlled but may be dangerous when handled carelessly. The idea has developed that any substance which has been added to food is hazardous and its use should be prohibited.

The faculty of the University of Missouri College of Agricultrue is concerned with this problem. After careful consideration of the matter, a committee of the faculty has prepared a statement summarizing pertinent information concerning it.

A copy of this statement is enclosed for your information.

Very truly yours,

J. H. LONGWELL, *Director.*

CHEMICAL RESIDUES IN HUMAN FOODS AND ANIMAL FEEDS—A REPORT OF THE COMMITTEE ON CHEMICAL RESIDUES, MISSOURI COLLEGE OF AGRICULTURE

The need for protecting the public health from injurious amounts of chemical residues in the food supply is paramount. Agricultural chemicals are widely used in food production. As food demands become greater, the amounts are increasing, and must continue to increase. Since many of these chemicals, if improperly used, can adversely affect human health, the need for regulations is obvious.

For the past 30 years, responsible legislators and individuals in the medical profession, State and Federal agencies, and the chemical industry have been aware of, and concerned with, this problem. Laws have been enacted, and many millions of dollars have been spent on research to insure safe use of agricultural chemicals.

The health of its citizens is a prime resource of the United States. Much of the credit for this asset can be attributed to an exceptionally high level of nutrition. Although it is usually taken for granted, the residents of the United States are the best fed people in the world. In no other country is there available—and at reasonable prices—such an abundant supply of wholesome, high-quality food.

This situation could not exist, however, were it not for agricultural chemicals—fertilizers, insecticides, herbicides, fungicides, growth stimulators, sanitation compounds, disease control materials, etc. These tools are as indispensable to food production as tractors, hybrid seeds, improved crop varieties, and improved livestock. Threats to safe, effective, and necessary uses of these chemicals are very real threats to both the quantity and quality of our national food supply.

LEGISLATION NOW IN EFFECT WHICH PERTAINS TO CHEMICAL RESIDUES ON FOOD

Three laws have been passed in recent years by the U.S. Congress which specifically regulate the sale and use of agricultural chemicals.

The Insecticide, Fungicide, and Rodenticide Act provides that pesticidal chemicals can move in interstate commerce only under labels approved by the U.S. Department of Agriculture. For a label to be registered by the USDA, the manufacturer must first prove the compound is effective in controlling destructive pests. The label must state specifically which pests can be controlled with the compound, how much can be used, upon which crops it can be used safely, how it should be applied, and what precautions must be observed. These precautions must include detailed directions which insure no more than the allowable residue remaining on, or in, an agricultural product when it is harvested or marketed.

Public Law 518, commonly referred to as the Miller Pesticide Residue Amendment to the Food, Drug, and Cosmetic Act, is administered by the Food and Drug Administration. This legislation established procedures whereby the Food

and Drug Administration sets, and publicly announces, residue tolerances for each chemical on each agricultural product. Many tolerances thus set are zero. Proof of residue safety is made the direct responsibility of the basic manufacturer.

The Delaney clause in the food additives amendment to the Federal Food, Drug, and Cosmetic Act was passed during the closing days of the 1959 congressional session. The wording of this amendment, in effect, makes possible the interpretation that virtually all agricultural chemicals are "food additives." This legislation prohibits the use of a "food additive" in agricultural production if the "food additive" has been shown to cause cancer in laboratory animals. This is true, regardless of the gross dosages used in laboratory tests. Since the Food and Drug Administration considers livestock feed in the same category as human foods, such prohibitions apply to animal feed production as well as the production of human food.

The Delaney amendment eliminates administrative discretionary power by the Food and Drug Administration. It prohibits consideration of whether or not the "food additive" is present in amounts remotely approaching those necessary to be considered injurious.

Nearly every State also has legislation modeled after the Federal laws. These State regulations apply to all such chemicals sold in the States, including those which do not cross State lines, and are thus exempted from Federal authority.

TESTS NECESSARY FOR A COMPOUND TO MEET THESE LEGISLATIVE REQUIREMENTS

An agricultural chemical is not offered for sale until it has been thoroughly tested for safety. These compounds are subjected to more exhaustive testing to determine their toxicological effects than are any other group of compounds—including human pharmaceuticals.

As soon as a new compound shows potential value as an agricultural chemical, comprehensive research is started immediately to obtain the data necessary for satisfying regulations resulting from the above legislation. This research is the responsibility of, and is financed by, the basic manufacturer of the chemical compound. Three to five years, and the expenditure of $1 to $3 million are usually required for this research.

In addition to detailed studies of performance against both pest and beneficial organisms, exhaustive research must also be done upon the compound itself, and upon its toxicology under all conditions. Although the Food and Drug Administration has never specifically described or standardized the techniques it will accept for proving a chemical safe, the general pattern of testing is as follows:

(*A*) *Exhaustive studies of the compound and its physical properties*

(1) The chemical structure must be specifically identified and its physical and chemical properties determined in detail.

(2) A specific, practical, and extremely sensitive method of analysis must be developed. Usually this analytical method must be sufficiently sensitive to positively identify, and quantitatively determine, the presence of the compound in amounts of 0.1 part per million. (This is roughly equivalent to identifying and accurately measuring 1 specified inch in 160 miles.)

(3) A complete study must be made of the compound's reactivity, and its breakdown components must be determined and identified. Specific analytical methods for each major breakdown component must also be developed.

(*b*) *Toxicological research*

(1) *Acute oral tests.*—Single lethal doses must be given to individuals of at least three different species of laboratory animals to determine:

(*a*) Lethal doses.
(*b*) Symptoms resulting from such doses.
(*c*) Clinical course of adverse effects.
(*d*) The presence or absence of gross and/or microscopic lesions.
(*e*) The mode by which death is produced.

(2) *Subacute oral tests.*—Ninety-day feeding tests at several different dose levels must be made on at least 10 males and 10 females of 3 different species of laboratory animals to determine:

(*a*) Dosage-response relationships.
(*b*) Effect upon food consumption.
(*c*) Effects upon growth.
(*d*) Mortality rate.
(*e*) Effect upon blood and urine composition.
(*f*) Effect upon the weights of different body organs.

(3) *Chronic oral tests.*—Groups of 25 weanling rats must be fed rations containing three different levels of the compound. The lowest concentration must be one which produces no detectable effects on the animals. The highest concentration must be one at which death will result. The rats must be fed the compound continuously for 2 years, which is considered their normal life span. In addition, one other species of animal, such as the dog, must be fed in the same manner for a period of at least 1 year. With certain compounds considered as "problem chemicals", additional groups of rodents must also be used. These tests are made in order to:

(*a*) Obtain additional data on all catagories of the foregoing tests.

(*b*) Determine if the compound is absorbed and at what rates.

(*c*) Determine if the compound is stored in any body tissue, and at what rates.

(*d*) Determine the rate at which the compound is broken down and/or excreted.

(*e*) Determine the effects upon food digestibility.

(*f*) Determine effects upon reproduction.

(*g*) Determine effects upon lactation.

(*c*) *Tests for carcinogenic, or cancer-producing tendencies*

(1) Detailed observations must be made throughout all toxicological tests for the possibility of cancer which might appear in any portion of the body of any individual animal.

(2) Repeated tests must be made whereby the compound is subcutaneously injected into certain strains of mice known to be highly prone to cancer development.

Based upon data from the above research, a dosage level which is safe for rats is determined. If no cancer, which can be attributed to the compound, has appeared in any laboratory animal during the course of the tests, a safe dosage level for humans is then set at approximately one one-hundreds of that considered safe for rats. This figure is subsequently used as the upper limit for residue in human food. It should be noted, however, that with some foods—such as milk—no residue of any chemical at any level will be considered, regardless of the data which might have been obtained from toxicological research.

Research on basic toxicology is the responsibility of the manufacturer of a chemical. Determination of chemical residues which will remain under use conditions of a particular State is the responsibility of the Land Grant College of that State. Many colleges, including Missouri College of Agriculture, have not yet completely assumed this responsibility because they lack adequate chemical residue testing facilities. Since residue determinations are now as fundamental as data on performance, however, it is anticipated such facilities must be available in the near future.

BASIS FOR DIFFICULTIES

The greatest difficulty and confusion now encountered with chemical residues is caused by (1) administrative decisions to set zero tolerances for all chemicals in some foods—such as milk—despite results of toxicological research, and (2) the prohibition of use for all chemicals, which, by terms of the Delaney amendment, are labeled "carcinogenic".

In both instances, the same basic questions are involved:

(1) Do results from exhaustive toxocological tests provide sufficient information to permit the setting of a tolerance which will allow practical and needed use of a chemical, but still not constitute a hazard to the public health?

(2) Is there justification for setting tolerances on the basis of administrative decisions and legislative action instead of upon interpretation and application of scientific research data?

The Delaney amendment was responsible for the recent cranberry and caponette episodes. It should be noted this legislation was not introduced at the request of the Food and Drug Administration, and has never had broad scientific support. The reasons for this lack of support are obvious.

All foods are a complex of different chemical compounds. A large portion of foods inherently contain small amounts of chemicals which, in large amounts, can be made to produce adverse effects upon laboratory animals—effects such as

hypertension, arthritis, cardiovascular disturbances, cancer, etc. In the amounts present, however, these compounds do not tend to affect normal good health and longevity.

Singling out any one of the conditions—such as cancer—is unwarranted. Legislation to eliminate traces of so-called carcinogenic chemicals is scientifically unjustified and impossible to enforce.

For instance, simple sugars present in milk, fruits, and several other foods, can cause cancer in laboratory animals. These compounds cannot be prevented from occurring naturally in foods. But if they are extracted from one food and are added to another, they become food additives. Under terms of the Delaney amendment, they are then a hazard to the public health and must be excluded from the market.

Animal fats and vegetable oil such as lard and peanut oil can also induce cancer in laboratory animals. These products are commonly used as shortening in bakery goods, and therefore become food additives. The Delaney amendment could ban from the market all foods in which these shortenings are used.

Some compounds which are necessary to normal good health of an animal are also "carcinogens" as defined by the Delaney amendment. Estrogenic hormones are necessary chemicals which occur naturally in animals and some plants. As defined by the Delaney amendment, they are also carcinogenic. Stilbestrol is a synthetic estrogenic hormone. It is also "carcinogenic," by the Delaney amendment definition. Although estrogenic hormones occur naturally in meat in amounts up to 50 parts per million, sale of caponettes was stopped because stilbestrol was found in some caponette livers at levels up to 0.03 parts per million.

There are no scientific data which indicate that traces of man-added carcinogens are more harmful than like amounts of carcinogens put there by nature. Neither are there data which indicate minute amounts of "carcinogenic" chemicals complement each other or accumulate to levels approaching those needed to produce cancer. In fact, there is a lack of scientific data which show that these traces adversely affect the health of any animal in any manner.

Therefore, legislation requiring zero amounts of these so-called carcinogenic food additives in all human food and animal feed, is not scientifically justified. Such tolerances are based upon fear instead of fact. They reflect hysteria instead of research.

WHAT IS NEEDED

(1) Immediate revision of legislation and regulations which result in chemical residue tolerances being set upon considerations other than scientific application of toxicological research data.

(2) Regulatory policies, similar to those applicable to human pharmaceuticals, which would permit residue tolerances that do not constitute a hazard to the public health, but which would allow necessary and practical chemical usage.

(3) Legislation to prevent entire segments of agriculture from being condemned because a very small percentage of the total products are in violation. Without recourse or due process of law, innocent individuals can thus be financially ruined by the opinions, decisions, or actions of a lone administrator. The disastrous potentialities of this situation have been made apparent during the past few months.

(4) Measures which would prevent a regulatory agency from using procedures and publicity which tend to incite fear and hysteria among the general public.

(5) Increased state research facilities, to allow residue determinations to keep pace with performance research.

(6) Additional Federal and State research facilities to conduct basic research aimed at minimizing chemical residues.

Missouri College of Agricultural Chemical Residue Committee: J. E. Edmonson, professor of dairy husbandry; O. Hale Fletchall, associate professor of field crops; Loren D. Kintner, associate professor of veterinary pathology; Boyd L. O'Dell, professor of agricultural chemistry; Stirling Kyd, extension professor of entomology, chairman.

Medicated Animal Feeds Under the Food Additives Amendment of 1958: A Case Study

Adrien L. Ringuette, Abbott Laboratories, North Chicago, Ill., Presented Before the Animal Health Institute, April 18, 1960

The subject that was given me is the current legislative situation affecting the animal health industry. It seems appropriate to approach this subject by focusing our attention upon the pressing regulatory problems of the medicated animal feed industry, particularly pursuant to the food additives amendment of the Federal Food, Drug, and Cosmetic Act.

If in the course of this discussion I appear to trespass at times into the scientific domain, I ask your forgiveness, but it does seem rather difficult for the lawyer in the food and drug industry—as it surely is for the scientist—to separate science from law.[1]

Definition, Use and Importance—A Tribute to Research and Its Applications

Medicated animal feeds have been defined as feeds for livestock which contain various drugs for medicinal or growth-promoting purposes. Actually, medications constitute only a few of the many substances which have come to be added to livestock feeds. For our purposes, however, it will be sufficient to confine ourselves to the use of drugs in animal feeds.[2]

The widespread commercial addition of drugs to poultry and livestock feeds is a post-World War II phenomenon. By January 1956, when the Food and Drug Administration sponsored a symposium on medicated feeds, such feeds accounted for 20 to 25 percent of all manufactured feeds. Today the great bulk of manufactured feeds, perhaps as much as 90 percent of all animal feeds, contains drugs for the prevention or control of specific livestock diseases as well as for the general purpose of growth promotion.[3]

Among the more widely used drugs routinely added to certain types of livestock feed, the organic arsenical compounds and diethylstilbestrol contribute importantly to the benefits provided by medicated feeds. Diethylstilbestrol is a hormone included in feeds to increase the weight and improve the feed efficiency of about 75 percent of all beef cattle in feed lots in this country.[4] Organic arsenical compounds are widely used in poultry and swine feeds, chiefly for growth promotion and improvement in feed efficiency, and as an aid to control of disease.[5] Five such compounds are now in use in medicated feeds, accounting for as much as 16 million tons of broiler, laying, and swine feeds annually.[6]

The use of medication in feeds has been a principal factor in revolutionizing feed technology, with important economic implications. It has both improved

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[1] For the views of an eminent scientist on the relation of law and science in the food and drug field, see Oser, "The Interdependence of Law and Science Under the Food, Drug, and Cosmetic Act," 9 F.D.C.L.J. 355 (1954).

[2] The best general references to this subject are contained in the "Proceedings of the Symposium on Medicated Feeds," sponsored by the Veterinary Medical Branch of the Food and Drug Administration, Jan. 23 and 24, 1956 (Medical Encyclopedia, Inc., 1956). Henceforth, this volume will be referred to as "Symposium." See the following articles in Symposium: Hunter, "History of Medicated Feeds," pp. 7–8; Lubbehusen, "Medicated Feeds, Some General Comments," pp. 9–14; Scoville, "Medicated Feed as an Economic Factor in the Livestock Industry," pp. 121–126; Briggs and Gay, "Public Health Significance of Drugs in Animal Feeds," pp. 156–158; Welch, moderator, "Panel Discussion," pp. 197–204.

[3] The following statement found in the Symposium is illustrative of the variety of drugs contained in feeds: "Examples of drugs now routinely given to farm animals in the feed for various purposes include at least five different antibiotics * * *, several organic arsenicals, plus sulfaquinoxaline, nicarbazine, nitrophenide, nitrofurazone, furazolidone, and 2-amino-5-nitrothiazole. Several of these are used as growth promotants, and others are used for the control or partial control of such diseases as scours in calves; baby pig diarrhea, dysentery, and necrotic enteritis in swine; and coccidiosis, hexamitiasis, respiratory disease, blue comb, infectious sinusitis, and blackhead in poultry. In addition, several hormonelike substances, such as stilbestrol or dievestrol diacetate, are used in beef cattle and poultry feeding. Also several anthelmintics, such as phenothiazine, are used to control Haemonchus, Ostertagia, and Trichostrongylus in cattle." Briggs and Gay, Symposium, p. 156.

[4] The popularity of diethylstilbestrol was established within a year after its introduction in beef cattle feeds. Byerly, "Hormones in Feeds," Symposium, pp. 17–27. For current data, see transcript, hearings before the Committee on Interstate and Foreign Commerce, House of Representatives, on "Color Additive Amendments to the Federal Food, Drug, and Cosmetic Act" (1960), pp. 446–449 (testimony of Dr. Thomas Carney).

[5] Frost and Spruth, "Arsenicals in Feeds," Symposium, pp. 136–149.

[6] The five organic arsenicals are arsanilic acid, 3-nitro-4-hydroxyphenyl arsonic acid, 4-nitrophenyl arsonic acid, 4-ureidophenyl arsonic acid, and arsenosobenzene. Frost, "Ten Year Record for Organic Arsenicals," in press, for Feed Age, May 1960.

the efficiency of feed conversion and affected the organization of production on the farm, with a resulting higher production of meat, milk, and eggs than would otherwise be possible. As stated at the Symposium on Medicated Feeds by representatives of the National Institutes of Health:

"As far as benefits to mankind from the use of medicated feeds are concerned, the main direct benefit is the present availability of more and better foods at relatively less cost to the producer and to the consumer." [7]

The revolution in feed technology constitutes an application of research of the first magnitude. It was made possible only through the advances of research on a broad front, and through the synchronization of the research programs of private industry, of the colleges, and of the Government.[8] Dr. Earl L. Butz, dean of agriculture at Purdue University, recently wrote: "The use of chemicals is a principal reason for America's abundance of food and fiber." [9]

Dr. Butz cited as illustrations of this conclusion marked improvement in the productivity of land and animals resulting largely from the use of chemicals and drugs. A striking example is the doubling of per capita consumption of chicken meat in the last 15 years. According to Dr. Butz:

"The use of chemicals and pharmaceuticals completely revolutionized this industry, and has substantially made it possible for our good growers to produce 1 pound of chicken meat with 2 pounds of feed. This is phenomenal in a biological industry. It was undreamed of just two decades ago." [10]

Testifying before the Committee on Interstate and Foreign Commerce recently, Dr. M. R. Clarkson, Associate Administrator of the Agricultural Research Service, Department of Agriculture, emphasized the role of research and the development of chemicals for use in crops and in livestock production as important factors in our agricultural economy.[11] This is a continuing role. As Dr. Clarkson pointed out, within 50 years farmers will need to produce at least twice their present crop output and more than twice their present production of livestock products. New applications of research and new technology will, therefore, be required.

REGULATION AS DRUGS—ESTABLISHMENT OF SAFETY

Prior to the enactment of the Food Additives Amendment of 1958, the drugs then in commercial use in feeds had all been extensively tested by their manufacturers and cleared as safe for their intended use by the Food and Drugs Administration.

When first introduced into commerce, these drugs were considered as new drugs subject to the requirements of the new drug section of the Federal Food, Drug, and Cosmetic Act, except that medicated feeds containing antibiotic drugs are regulated under the antibiotic certification section of the act.[12]

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[7] Briggs and Gay, "Symposium," p. 158. The authors state that factors leading to the increased popularity of medicated feeds include (1) the present availability of low-cost, stable, and efficient drugs for specific diseases and of effective hormonelike materials, (2) the ease, effectiveness, and safety of administering drugs in the feed to large numbers of animals on a daily basis, and (3) the remarkable growth of the modern feed industry.

[8] Butz, "The Impact of FDA Regulations on Research and Living Standards," Feedstuffs, Mar. 26, 1960, pp. 10–12. Reviewing the remarkable record made by medicated feeds, one of the participants in "Symposium on Medicated Feeds" said: "It was made because research resulted in the finding of chemicals of outstanding efficiency in preventing clinical outbreaks of several infections that represented universal problems of the poultry industry; hence the probable need for preventive medication could be projected with a fair degree of accuracy in the light of past experience." Lubbehusen, "Symposium," p. 10.

[9] Butz, "Feedstuffs," p. 11.

[10] Butz, "Feedstuffs," p. 11. It should be noted that the importance of drugs in feeds was emphasized at the Symposium. See Boughton, "Anthelmintics in Animal Feeds," "Symposium," p. 61, who said: "We have passed the point at which only the so-called natural feed materials rate consideration as feed ingredients."

[11] Transcript, hearing (1960), pp. 629–636.

[12] Myers, "New Drug Status of Medicated Feeds," Symposium, pp. 66–69; Jester, "The Antibiotic Regulations for Medicated Feeds," Symposium, pp. 50–52; Kneeland, "Medicated Feeds and the Federal Law," 12 F.D.C.L.J. 359 (1957). Sec. 507 of the Federal Food, Drug, and Cosmetic Act provides for certification of batches of drugs composed wholly or partly of penicillin, streptomycin, chlortetracycline, chloramphenicol, or bacitracin or any derivative thereof. Thus a medicated feed containing one of these antibiotics is governed by this section. Such a feed, even though additionally containing other drugs, is excluded from the new drug provisions of the act. Each batch must be certified by the Food and Drug Administration unless the feed is exempted from certification by regulations promulgated by the FDA. But since exemptions are granted only upon the presentation of data proving that the drug combination is safe and efficacious for use, the antibiotic regulations tend to approximate the same degree of control as is exhibited under the new drug section.

Under the new drug section,[13] no manufacturer can market a new drug unless an application filed with the Secretary of Health, Education, and Welfare is effective. Effectiveness may be witheld unless the application contains data to show that the drug is safe for use under the conditions of its intended use. It is apparent that the law calls for the pretesting of new drugs by manufacturers, and for evaluation by the Secretary of the likelihood of harm resulting from the proposed use of a drug.

However, medicated animal feeds were also subject to the food provisions of the Federal Food, Drug, and Cosmetic Act. It was there provided that any poisonous or deleterious substance added to any food, except where such substance is required in the production thereof or cannot be avoided by good manufacturing practice, is deemed to be unsafe.[14] The operation of this provision, as distinguished from the new drug section of the act, does not depend upon evaluation of the likelihood of harm resulting from the proposed use of an additive. Rather, it merely calls for inquiry as to whether the additive is sufficiently toxic to be classed as a "poisonous or deleterious substance." [15]

The classification of medicated feeds as drugs made it necessary for manufacturers of new medicaments to obtain effective new drug applications prior to introducing them into commerce. But the classification of meat and other products from livestock as food enabled the Food and Drug Administration to consider residues of drugs contained in such food products as poisonous or deleterious substances, thus rendering the food products adulterated, unless the drugs are necessary for the production of meat or other products used for food.[16] In a policy statement published in the Federal Register on December 4, 1948, the Food and Drug Administration declared that in the case of drugs intended to effect physiological changes in farm animals, as distinguished from drugs intended for the prevention or treatment of animal disease, manufacturers were required to show that under the conditions of use residues of the drugs were eliminated from the livestock prior to marketing.[17] Tolerances were not to be granted such residues even though their safety could be established.[18]

The problems were worked out under the vigilance of the Food and Drug Administration, and with the cooperation of drug manufacturers, the feed-manufacturing industry, colleges, research laboratories, and food-control officials, with the result, as indicated by representatives of the National Institutes of Health, that no drugs are used in medicated feeds that have not been proved to be safe.[19] Their conclusion, that "* * * the benefits of medicated feeds far outweigh any evidence of possible danger to mankind from their use * * *" seems amply justified.

REGULATION AS FOOD ADDITIVES—REPUDIATION OF SCIENTIFIC JUDGMENT

The provisions of the food law prohibiting the addition of any poisonous or deleterious substance to any food were generally considered unsatisfactory. On the one hand, such provisions did not authorize the use of substances which might be desirable and safe at low levels of use by toxic at higher levels. On the other hand, they were impractical to enforce effectively in the absence of any require-

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[13] Federal Food, Drug, and Cosmetic Act, sec. 505.

[14] Federal Food, Drug, and Cosmetic Act, sec. 406(a). The history of this section is outlined in Markel, "The Food Additives Amendment of 1958," 14 Bus. Law. 514 (1959).

[15] From the point of view of evaluation of safety, the term "poisonous or deleterious substance" is not meaningful. Consider the following statement of the Food Protection Committee: "There need be no hazards involved in the use of chemical additives in foods, provided adequate scientific research programs are carried out prior to the use of an additive. The fact that a chemical is toxic does not mean per se that its proper use as an additive will entail a hazard to man." Food Protection Committee, Food and Nutrition Board, "Use of Chemical Additives in Foods," publication of National Academy of Sciences—National Research Council (1951).

[16] The policy of the Food and Drug Administration is illustrated in the following papers prepared by representatives of this agency: Collins, "The Problem of Drugs for Food Producing Animals and Poultry," 6 F.D.C.L.J. 872 (1951); Moskey, "Drugs in Animal Feeds," 8 F.D.C.L.J. 108 (1953); Meyers, "Symposium," pp. 66–69; Kneeland, "Medicated Feeds and the Law," 12 F.D.C.L.J. 359 (1957).

[17] Kleinfeld and Dunn, "Federal Food, Drug, and Cosmetic Act, Judicial and Administrative Record, 1938–49," p. 759.

[18] On the other hand, tolerances could be granted for residues of drugs intended for the prevention or treatment of animal disease on the ground that such use of those drugs was necessary in the production of livestock. In such cases tolerances would only be granted if shown to be safe. Meyers, "Symposium," p. 69.

[19] Briggs and Gay, "Symosium," pp. 156–158.

ment of pretesting of additives by their manufacturers. The Food Additives Amendment of 1958 was designed to remedy these conditions.[20]

The House Committee on Interstate and Foreign Commerce, reporting this legislation, stated that—

"The purpose of the legislation is twofold: (1) To protect the health of consumers by requiring manufacturers of food additives and food processors to pretest any potentially unsafe substances which are to be added to food; and (2) to advance food technology by permitting the use of food additives at safe levels." [21]

The provisions of the food additives law, in the absence of the Delaney clause, which we will discuss presently, probably would not have adversely affected the animal-health industry. Pursuant to the law, a substance which falls within the definition of a food additive, including a substance added to animal feed, is declared unsafe, unless there is in effect a regulation prescribing the conditions under which such additive may be safely used. In theory, at least, medicated animal feeds meeting the safety requirements of both the new drug law and the food additives law are feasible.[22] Furthermore, existing feed medications, having been reviewed by the Food and Drug Administration, are considered exempt from reexamination under the food-additives law, pursuant to the prior sanction or the general recognition of safety exemptions contained in the law.[23]

If a medicated feed is not exempt, it is necessary to obtain a regulation prior to marketing it. But, by virtue of a clause in the food additives law known as the Delaney clause, a regulation cannot issue permitting use of the additive "* * * if it is found to induce cancer when ingested by man or animal, or if it is found, after tests which are appropriate for the evaluation of the safety of food additives, to induce cancer in man or animal * * *." This clause has been interpreted to limit the discretion of the Food and Drug Administration

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[20] The legislative history of the food additives bill amply bears out this conclusion. H. Rept. 2284, 85th Cong., 2d sess., Committee on Interstate and Foreign Commerce, House of Representatives, July 28, 1958; S. Rept. 2422, 85th Cong., 2d sess., Committee on Labor and Public Welfare, U.S. Senate, Aug. 18, 1958. See the summary of the legislative history of the bill recently made by Edward Brown Williams for the Pharmaceutical Manufacturers Association. "Hearings" (1960), pp. 518–542. As early as 1956, the Food and Drug Administration supported a policy to relax the flat prohibition against unnecessary or avoidable poisons in food as contained in the 1938 Federal Food, Drug, and Cosmetic Act. "Hearings Before a Subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, on Bills To Amend the Federal Food, Drug, and Cosmetic Act (1956)," pp. 193–194 (testimony of George P. Larrick, Commissioner of Food and Drugs). The importance of this decision was described a few months later by the Assistant Secretary, Department of Health, Education, and Welfare: "This was a far-reaching step. It means abandonment of the per se rule and would be a modification of the 'necessity' rule. It would mean that any chemical additive—even a known poison—could be used in a harmless amount, provided it would serve some useful purpose in production or be of benefit to the consumer. In my opinion, this is a scientifically sound position." Mintener, "The Food-Additive Problem," 11 F.D.C.L.J. 621, 626 (1956). The responsible scientific community takes a similar view. See footnote 15. For illustrative discussions of the dual inadequacy of the 1938 act will respect to food additives, see: Snyder, "An Appraisal of the O'Hara Bill To Provide for the Pretesting of New Chemical Additives to Food," 9 F.D.C.L.J. 693 (1954); Foster "Food-Ingredient Legislation," 10 F.D.C.L.J. 82 (1955); Miller, "Chemicals in Food," 10 F.D.C.L.J. 104 (1955); Markel, "Food Additives," 10 F.D.C.L.J. 769 (1955); Gosnell, "Food-Additive Legislation—A Review of Fundamentals," 12 F.D.C.L.J. 369 (1957).

[21] H. Rept. 2284, 85th Cong., 2d sess., Committee on Interstate and Foreign Commerce, House of Representatives, July 28, 1958.

[22] It is clear that drugs added to animal feed must contend with both the food additives law (sec. 409) and the new drug law (sec. 505). Insofar as both laws are designed to permit the marketing of safe products, however, presumably safe products can be cleared under both laws. But the overriding problem is whether the Delaney clause (sec. 409 (c)(3)(A)) can be reconciled with the basic principles of these laws. Hagan, "The Food-Additives Amendment—Its Effect on Veterinary Drugs," 15 F.D.C.L.J. 117 (1960); Checchi, "Food-Additives Procedures and Policies," 14 F.D.C.L.J. 591 (1959); Oser, "Current Problems Posed by the Food Additives Amendment," 14 F.D.C.L.J. 574 (1959). The food additives law is not without problems, however. See Oser, "Food Additives—New Law Causes Many Problems," C & EN, Feb. 15, 1960, p. 108; Mulford, "Some Vexing Problems of Additives Under the New Law," 15 F.D.C.L.J. 10 (1960); Hutchings, "The Food Additives Amendment as Seen by the Technologist," 15 F.D.C.L.J. 17 (1960); "FDA Answers to Questions Submitted at Washington Conference on November 24–25, 1958, To Discuss Food-Additives Amendment," 14 F.D.C.L.J. 5 (1959).

[23] Federal Food, Drug, and Cosmetic Act, sec. 201(s). There are also problems that have been resolved in the matter of exemptions, for it appears that there are rather sharp differences of opinion as to the scope of both exemptions, particularly as applied to veterinary drugs. See Hagan, "The Food Additives Amendment—Its Effect on Veterinary Drugs and Feeds," 15 F.D.C.L.J. 117 (1960). One perplexing problem is the matter of general recognition of safety. For the Administration view, see Goodrich, "The Beginning Point Under the Food-Additives Amendment—What Substances Do Qualified Experts Generally Recognize as Safe? "14 F.D.C.L.J. 584 (1959). See, also, the references contained in footnote 22.

in respect to compounds having the capacity to cause cancer. Such compounds are thus distinguished from compounds which have the capacity to cause any other disease or which may be toxic at some level.

The basic principle of the food additives law, however, in order to accomplish both of its purposes, is that a food additive shall be approved for a particular use unless a fair evaluation of the data fails to establish that the additive will be safe under the conditions of its use. The legislative history of the bill sets forth the applicable concept of safety.[24] Safety requires proof of harmlessness under the conditions of use and not proof of absolute harmlessness under any conceivable circumstances. This calls for the exercise of scientific judgment.[25]

The argument for setting apart compounds which have the capacity to cause cancer is that in the present state of our scientific knowledge we cannot be certain that any use of a demonstrated carcinogen is safe. This argument has now been taken up by the Secretary of Health, Education, and Welfare as the reason for endorsing the Delaney clause.[26] Let us now examine the operation of the Delaney clause upon the animal-health industry. Our object is to determine whether or not the Delaney clause is consistent with the basic principle of the food additives law.

Diethylstilbestrol is a compound which can be made to cause cancer in a few species of animals under certain conditions. It cannot be made to cause cancer in most animals, however, and no cancer in humans has been found attributable to diethylstilbestrol despite its wide medical use in humans for 20 years encompassing hundreds of thousands of patients. Furthermore, many common foods normally contain estrogens similar in physiological effects to diethylstilbestrol. Estrogens are part of the normal background of all of us.[27]

Yet, diethylstilbestrol must be considered a carcinogen, if by carcinogen we mean a product which will produce cancer in any species of animal. Therefore, according to the Food and Drug Administration, no food-additive regulation will be issued permitting the use of diethylstilbestrol in any feed. Its existing use in feeds shall be strictly limited to the scope of its exemption from the food-additives law.[28]

The evidence is overwhelming, however, that diethylstilbestrol has been shown to be safe when used in animal feeds as previously sanctioned by the Food and Drug Administration.

The Food and Drug Administration has examined data presented for six different uses of diethylstilbestrol, and new drug applications pursuant to the new drug section of the Federal Food, Drug, and Cosmetic Act have become effective for each use. The drug has been used in human medicine since 1941 and in the feed of beef cattle since 1954. The elimination of the drug from the food obtained from livestock fed diethylstilbestrol was demonstrated to

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[24] H. Rept. 2284, 85th Cong., 2d sess., Committee on Interstate and Foreign Commerce, House of Representatives, July 28, 1958; S. Rept. 2422, 85th Cong., 2d sess., Committee on Labor and Public Welfare, U.S. Senate, Aug. 18, 1958. See, also, Food Protection Committee, Food and Nutrition Board, "Principles and Procedures for Evaluating the Safety of Food Additives," Publication 750 of National Academy of Sciences-National Research Council (1960), p. 1, which states: "Results of critically designed studies of the physiologic, pharmacologic, and biochemical behavior of a proposed additive in various species of animals can provide a basis for evaluation of its safety at a specified level of intake by man. It is impossible, however, to establish absolute assurance that the additive at any level of intake will be completely safe for all humans under all conditions." This concept was also adopted by the report of the Joint FAO–WHO Expert Committee on Food Additives (1956), reprinted in "Hearings" (1958), p. 321.

[25] Matson, "Scientific Judgment in Law and Regulation," 15 F.D.C.L.J. 70, 75 (1960). Dr. Matson states: "The science of pharmacology performs on the basic assumption that research over a reasonably short period of time combined with insight as to the probable significance of the results will permit the acceptance of food additives as safe for human beings with substantially no hazard involved. This is the essence of scientific judgment."

[26] Transcript, "Hearings" (1960), pp. 19–34.

[27] Paper entitled "Safety of Diethylstilbestrol," transmitted to Committee on Interstate and Foreign Commerce, Feb. 11, 1960, and summarized at pp. 447– 455 of the transcript, "Hearings," before the committee. See, also, "Panel Discussion: Feeding Diethylstilbestrol to Cattle," "Symposium," pp. 170–177.

Dr. Gassner, head of the endocrine section at Colorado A. & M. experiment station, said: "Thus it seems that man and animal alike are forced normally to maintain a high threshold of response to estrogen and that the human is rendered relatively insensitive to the infinitesimally small amounts of hormone that possibly could be ingested with meat products." Id., at p. 173.

[28] See 21 CFR 3.37, "Status of certain veterinary drug components under the food-additives amendment to the Federal Food, Drug, and Cosmetic Act," published May 30, 1959, at 24 F.R. 4376. The policy statement was a general statement applicable to compounds falling under the Delaney clause. Diethylstilbestrol was held to fall within the Delaney clause. See Food Chemical News for June 22, 1959.

the satisfaction of the Food and Drug Administration, in accordance with its policy regarding medicated feeds as previously described. But even if undetectable residues were to exist in beef, the amount of the drug reaching our food supply would be insignificant in relation to the therapeutic dose of diethylstilbestrol and to the natural estrogenic background.[29]

It is submitted that in the case of diethylstilbestrol the Delaney clause has operated to deprive a safe use of this drug from clearance. This violates the basic principle of the food additives law. Scientific judgment has been entirely excluded.[30] This is a step backward, since even the 1938 act, with its per se rule on poisonous or deleterious substances, did not prohibit the clearance of diethylstilbestrol under the Federal Food, Drug, and Cosmetic Act. It is not sufficient, however, merely to reestablish the 1938 act for diethylstilbesterol. For the 1938 act would prohibit even insignificant residues of any drug in relation to the normal background. Such residues can be determined to be safe.[31]

Organic arsenicals provide another case in point.[32] Arsenic in one form or another is ubiquitous in nature. Arsenic compounds have been used in medicine for hundreds of years and for many years they dominated important areas in agricultural pest control. Between 1910 and 1945 organic arsenicals provided the best medical tools against man's most serious parasitic diseases, such as syphilis. Arsenic occurs naturally in many foods we eat, including eggs and the tissues of poultry. Arsenic occurs naturally in soils and vegetation, and sea water contains traces which are concentrated to high levels in marine algae and crustaceans. Arsenicals have been more widely studied and widely used in medicine and in agriculture than perhaps any other class of compounds. Yet, there is no reliable experimental evidence that any form of arsenic, organic or

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[29] See footnote 27. Dr. A.H. Holland, Jr., Veterinary Medical Director of Food and Drug Administration, Symposium, p. 176: "Our position, I think is very clear. All of the work, all of the literature we have had occasion to study and review over a period of many, many months preponderantly led to the conclusion that diethylstilbestrol as proposed for use in cattle feed was perfectly safe."

[30] It is perhaps significant that certain scientists advocating the prohibition of diethylstilbestrol are also among those who do not accept the exercise of scientific judgment in evaluating food additives. Consider the paper by Knight, Martin, Iglesias, and Smith, "Possible Cancer Hazard Presented by Feeding Diethylstilbestrol to Cattle," Symposium, pp. 167–169. That their paper was based upon "speculation" and "theoretical considerations" was indicated by the panel discussion that followed (pp. 170–177). Dr. W. Coda Martin, president of the American Academy of Nutrition, testified the following year that the academy approves of the concept of total nutrition, which means food free of chemical additives. He further said: "The human body can utilize only natural foods as nourishment and survive. Chemicals are not food elements. Therefore, they can produce only negative or harmful results, even though they are by scientific analysis nontoxic." Hearings (1958), pp. 272, 279. Dr. W.E. Smith, also associated with the American Academy of Nutrition, said: "I submit that the adulteration of food with new chemicals is not a right, but a privilege that should be permitted only when there is real need." Id., at p. 173. In a letter to Congressman Delaney, he said: "It is simply not in the public interest to expose consumers to the unforeseeable risks of a host of biologically foreign food additives that may provide eye-appeal or advertising values but offer no nutritive benefit." Extension of remarks of Hon. James J. Delaney, vol. 103, Congressional Record, app. A1351–A1354, Feb. 21, 1957 (letter dated Jan. 28, 1957). These opinions clearly are not compatible with the scientific community as a whole or with the philosophy of the food additives laws. See footnote 15.

[31] See Matson, "Scientific Judgment in Law and Regulation" (15 F.D.C.L.J. 70, 80 (1960)). Dr. Matson states: "We must provide that scientists of the Food and Drug Administration shall be permitted to use reasonable scientific judgment, not giving regulatory recognition to those trace amounts of a food additive so distantly related to the amount and duration of use known to constitute a hazard that no purpose is served by recognizing them." The validity of this conclusion is at least implied in the publication of the Food Protection Committee, Food and Nutrition Board, "Problems in the Evaluation of Carcinogenic Hazard" from "Use of Food Additives," publication 749 of the National Academy of Sciences—National Research Council (1960), which states at p. 32: "The assignment of a tolerance level, or a safe level of use for man, of a demonstrated carcinogen must at present rest largely on the evaluation of alternate risks and values which usually cannot be expressed in quantitative terms. Quantitative knowledge about the carcinogen, e.g., the slope of the dose—response curve, the maximum experimental no-effect level, the minimum technological amount necessary for the proposed use, can, however, be taken into account in assigning such a tolerance level." Several of the scientists appearing before the Committee on Interstate and Foreign Commerce on Apr. 5–6, 1960, expressed the opinion that tolerances might well be set for "weak" carcinogens. E.g., Dr. Charles J. Kensler, hearings (1960), p. 743.

[32] Summaries of the data pertaining to arsenicals appear in the following: Frost and Spruth, Symposium, pp. 136–149; Frost, "Ten-Year Record for Organic Arsenicals," in press, for Feed Age, May 1960; Frost, Arsenic and Selenium in Relation to the Food Additive Law of 1958," in press, for Nutrition Reviews, May 1960; Frost, Perdue, and Overby, "Arsenicals in Feeds and Their Residues in Animal Tissues," address presented at Symposium on Chemical Residues in Agriculture, Michigan State University, Jan. 26–27, 1960; Frost, "Considerations on the Reality of Arsenic Cancer," unpublished manuscript dated Sept. 30, 1959; Kerr, "A Review of the Literature Pertaining to Arsenic as a Carcinogen," unpublished manuscript dated June 23, 1959.

inorganic, can be made to induce cancer in animals. Neither does the medical literature in any way implicate organic forms of arsenic as a carcinogen for man.[33]

There has been a great deal of speculation tending to implicate inorganic forms of arsenic as carcinogens.[34] The only substantial evidence, as distinguished from speculation, involving inorganic arsenicals, is that massive long-term potassium arsenite therapy—at a level high enough to constitute arsenic poisoning—produces a characteristic thickening of the skin of the palms of the hands and the soles of the feet, and abnormal pigmentation of the skin. In about 20 percent of the individuals developing skin thickening, the patches of thickened skin became cancerous. This hardly constitutes reliable evidence of carcinogenicity of all arsenical compounds. It suggests only that arsenic poisoning by potassium arsenite, a highly toxic compound, may produce a condition which in turn may cause cancer.[35]

Nevertheless, according to the Food and Drug Administration, no food additive regulation can be issued permitting the use of any compound containing arsenic,

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[33] It should be noted that in the recent pamphlet of the Food Protection Committee, Food and Nutrition Board, "Problems in the Evaluation of Carcinogenic Hazard From Use of Food Additives," publication 749 of National Academy of Sciences-National Research Council (1960), the only references to arsenic are that inorganic arsenic compounds are listed as agents "associated" with cancer incidence in man, and that arsenic trioxide is a compound which has been reported to be a carcinogen for animals but for which evidence of activity is inadequate.

[34] The first implication of arsenic as a possible carcinogen dates back to 1822 and was based on arsenic in fumes from smelting works. Since that time cases of cancer in man have been attributed to inorganic forms of arsenic to which the individuals have been exposed. These cases involved occupational exposure (for example, vineyard workers, miners, smelters, and factory workers), environmental exposure (for example, excessive arsenic in drinking water in Germany and Argentina), and medicinal exposure (chiefly potassium arsenite therapy). See references at footnote 32. That these observations are largely speculative—with the exception of the medical cases—is illustrated by Eckardt, "Industrial Carcinogens" (1959), who states (p. 11): "Thus in considering the number of employees that might have been involved since 1822, 1898, and 1926, respectively, for arsenic creosote, and saltpeter, the number of skin cancer cases attributed to these agents is so small that there appears to be considerable doubt as to whether they even should be included in the table. However, they have been included for the following reasons: In the case of arsenic, we know that hundreds of thousands of workers must be potentially exposed to it in the smelting industries, so that less than 25 cases reported since 1822 seems remarkably low. Nevertheless arsenic has been left in the table because it is known that medicinal overdosage with arsenic leads to hyperkeratoses of the palms and soles. These lesions are believed by practically all authorities to be precursors of cancer." An illustration of an erroneous implication of arsenic cancer is given by Frost, "Considerations on the Reality of 'Arsenic' Cancer," which was the belief that arsenic dust caused lung cancer in Schneeberg, Germany. Eventually, however, radiation injury from pitchblende was considered a more likely cause of the incidence of lung cancer. Dr. W. C. Hueper, of the National Cancer Institute, perhaps the most outspoken scientist who considers "arsenic and its compounds" (hearings before the House Select Committee To Investigate the Use of Chemicals in Foods and Cosmetics, House of Representatives, pt. 3 (1952), p. 1366), as known carcinogenic agents, testified in 1952 that "an appreciable number" of skin cancers were observed between 1938 and 1942 among vineyard workers in a district in Germany which had had an epidemic of chronic arsenic poisoning from the use of arsenical pesticides (pp. 1366–1367). Dr. Hueper repeated this testimony subsequently (hearings (1958), 372), and added: "Now they have among their vineyard workers not only skin cancer but lung cancer and liver cancers." However, Dr. Hueper's conclusion is purely speculative. Consider Eckardt, p. 147: "Thus, the fact that eight vineyard workers in Germany developed cancer of the lung, in itself, neither argues for nor against the idea that there is an occupational hazard of lung cancer among vineyard workers. It is necessary to know the number of vineyard workers involved, and determine whether the incidence is significantly elevated on a statistical basis. If one travels down the Rhine River in Germany, one is impressed with the vineyards which occupy the hills for mile upon mile of the trip. There must be thousands upon thousands of people who work in these vineyards, so that eight lung cancers among them may well constitute only the anticipated incidence of this disease. These observations only suggest that additional studies such as those done by Roth be undertaken in an attempt to develop definitive answers." In fact, extensive studies were conducted between 1937 and 1940 by the U.S. Public Health Service of orchardists around Wenatchee, Wash., where lead arsenate had been used as a tree spray since about 1900. No difference in incidence of various diseases, including cancer, was seen between orchardists and their families regularly exposed to unusual amounts of lead arsenate and those not so exposed. Frost, "Considerations on the Reality of 'Arsenic' Cancer."

[35] Hearings (1960), pp. 334–335 (testimony of Paul Gerden); hearings (1960), p. 810 (testimony of Dr. Morton L. Levine); Frost, "Considerations on the Reality of 'Arsenic' Cancer." Frost concluded: "Neubauer's (1947 major review "Arsenical Cancer" lists only 143 cases of medicinal arsenical epithelioma from the literature. Thus arsenic cancers appear as an extreme rarity, even from 1905 to 1947 when millions of people were treated with arsenicals. Cancer is reported to occur in one of five men and one of four women. Eckardt (1959) indicates that cancer of the skin occurs normally in about 30 per 100,000 per year. From the statistical standpoint the reported cases would actually seem far too isolated and few in number to warrant a direct association between arsenic therapy and cancer."

including organic arsenicals, until and unless the compound can be shown not to have any carcinogenic potential.[36] But scientists indicate that no one can show that any compound cannot cause cancer.[37] Thus, only those uses of organic arsenical compounds which are exempt from the food additives law may be employed.

Yet there is not one scintilla of evidence of cancer induction throughout history by any organic arsenical compound in man. No one has been able reliably to induce cancer with any organic arsenic compound in any species of animal at any level or by any means of administration.

The evidence is overwhelming, furthermore, that the organic arsenical compounds, which have been extensively tested, and approved by the Food and Drug Administration, under the new drug law, have been shown to be safe under their conditions of use.

Because of general recognition of safety of several of the organic arsenicals, in fact, they no longer require regulation under the new drug law as new drugs, and they are considered to be exempt from the food additives law. In each case, however, all organic arsenical compounds were originally marketed pursuant to effective new drug applications under the Federal Food, Drug, and Cosmetic Act. Organic arsenicals have been used in human medicine since the beginning of the 20th century, and in medicated animal feeds since 1951. Residues of the drugs in eggs and tissues, furthermore, when used under recommended conditions, are in the same range as normal content of arsenic in such foods. Approval of residues of organic arsenicals under these circumstances is in accordance with established policy of the Food and Drug Administration under the new drug law. Such residues are less than established tolerances in fruits and vegetables sprayed with inorganic arsenicals, and are insignificant in relation to the natural background of arsenic.[38]

It is submitted that in the case of organic arsenicals the Delaney clause has again operated to deprive a safe use of these drugs from clearance in violation of the basic principle of the food additives law. Scientific judgment has been

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[36] The basic policy of the Food and Drug Administration applicable to veterinary drugs held to be carcinogens within the meaning of the Delaney clause is set forth in the regulations at 21 CFR 3.37 (see footnote 28). Organic arsenical compounds were held to fall within the Delaney clause. See Food Chemical News for June 22, 1959, and for July 13, 1959. The FDA position was expressed in letters which said in part: "It is a known fact that certain inorganic arsenic compounds and certain synthetic materials with hormonelike activity similar to dienestrol diacetate have been found to produce cancer in man. Because of this, our scientific advisers cannot say that arsenic compounds used in feed or dienstrol diacetate are safe until it is demonstrated that such compounds do not have this carcinogenic potential. They would have to have appropriate data to answer this question. Furthermore, if an arsenic compound, after study, is found not to produce cancer itself, we would need to know whether any residue it leaves in edible products of treated animals is the organic or inorganic form."

[37] It seems clear that negative results in animal testing are not considered proof of lack of carcinogenicity in humans. Food Protection Committee, Food and Nutrition Board, "Problems in the Evaluation of Carcinogenic Hazard From Use of Food Additives," publication 749 of National Academy of Sciences—National Research Council (1960), p. 21. See Matson, " Scientific Judgment in Law and Regulation," 15 F.D.C.L.J. 70, 77–78 (1960), the Delaney clause uses the phrase "found to induce cancer." Secretary Flemming testified that this phrase applied only to substances which had been "demonstrated" to induce cancer (hearings (1960), p. 63). In testimony given prior to enactment of the food additives law, Dr. Herbert E. Carter stated (hearings (1958), p. 377): "It is commonplace for even a slight alteration in structure to change drastically the biological properties of a substance. Unfortunately each compound must be considered as an individual and evaluated independently." Accordingly, it seems improper to prohibit organic arsenicals with a long history of safe use on the basis of inconclusive evidence pertaining to inorganic arsenic compounds (hearings (1960), pp. 335–341, testimony of Paul Gerden)).

[38] Tolerances for lead arsenate and calcium arsenate, inorganic arsenic products used on fruits and vegetables, are in effect under sec. 408 of the Federal Food, Drug, and Cosmetic Act, applicable to pesticide chemicals in or on raw argricultural commodities (21 CFR 120.101(e)). Dr. William J. Darby, chairman of the Food Protection Committee, testified (hearings (1960), pp. 834–835): "You have heard that many substances which are naturally present in foodstuffs can, under special conditions, or conditions of very high intake, be associated with the occurrence of experimental cancer. To mention some of these which were noted yesterday, arsenic, selenium, radioactive materials, even lipids or fats, some precursors of oxyloc acid and so on. One could extend this list considerably. For example, one could even question whether the lowly turnip, and its several relatives, contain a substance which might be considered suspect—that is, a naturally occurring antithyroid substance, which has certain substances in common with aminotrizol. The content of foods very greatly in all of these substances. I do not know, however, of any evidence which links the ingestion of these small amounts present in foods to cancer in the human. They are unavoidable, and any workable legislation must allow the decision by someone that this is the case." (For organic arsenicals, see references cited at footnote 32, and hearings (1960), p. 336, testimony of Paul Gerden.)

entirely excluded, not only in the evaluation of safety, but also in the evaluation of whether or not these compounds are even capable of causing cancer.[39]

CURRENT STATUS—COST OF THE DELANEY CLAUSE

The cost of the Delaney clause to our growing society could prove enormous. It is purely conjectural whether a single human cancer will have been prevented by this action.[40] But there is little question about its likely consequences to feed technology, and ultimately to the public health.

The chief cost is not the potential loss of any single product to society, although the loss of any valuable product is to be deplored. If diethylstilbestrol and organic arsenicals were to be banned from the market, our farmers would have to produce significantly more animals each year to obtain the same amount of food products that we can now produce with the aid of these drugs.[41] I have said that existing uses of diethylstilbestrol and organic arsenicals are exempt from the food additives law. But the use of diethylstilbestrol for implantation in poultry for the purpose of synthetic caponization was also exempt from the food additives law. That use of diethylstilbestrol has already been suspended because of the pervasive influence of the Delaney clause.[42] Other uses of that drug and the uses of organic arsenicals must be considered as threatened as long as the flat ban of the Delaney clause can be made to apply to them. The chief cost, however, is the threat to future progress based on research. There is evidence that research projects have already been curtailed and that potential research projects are now being tabled in veterinary medicine.[43] These decisions of management to shift research effort elsewhere have been taken because the tremendous expense which is involved in the development of new veterinary drugs for use in medicated feeds may not be justified under present conditions.

There are several factors which have operated to influence industry in this regard. On the one hand there is the uncertain operation of the Delaney clause. Lack of scientific agreement as to the definition of a carcinogen or as to the tests which will be considered sufficient to establish noncarcinogenicity, coupled with the enormous expense involved in testing new drugs, are a part of the reason.[44] On the other hand, there are some interpretations of the food addi-

[39] The operation of the Delaney clause to cover dubious cases of carcinogenicity is a defect of the clause that was pointed out by the great majority of the scientists appearing Apr. 5–6, 1960, before the Committee on Interstate and Foreign Commerce (hearings (1960), pp. 685–889). The tendency to consider compounds as potential carcinogens unless proven noncarcinogenic is an aspect of repudiation of scientific judgment. Thus, Dr. Harold L. Stewart proposed not only that the Delaney clause be retained in toto, but also that exhaustive tests be required for each compound to minimize the possibility that it might be carcinogenic (hearings (1960), pp. 703–708). But the cost of such testing for one compound was estimated to be as much as $200,000 (hearings (1960), p. 752). Furtermore, such research is considered nonproductive, scientifically (hearings (1960), pp. 825–826).

[40] There was testimony offered before Congress at the time the food additives bill was being considered that there was no single proven instance of any human cancer related to a food additive. Dr. John H. Folger (hearings (1958), p. 363), and Dr. Emerson Day (hearings (1958), p. 374) so testified. More recently, Dr. William J. Darby, chairman of the Food Protection Committee, offered similar testimony (hearings (1960), pp. 834–835). Dr. M. R. Zavon pointed out that if food additives were a significant problem in causation of cancer, one would not expect to find a decrease in incidence of cancer of the stomach. Yet such has occurred (hearings (1960), p. 825).

[41] See, e.g., hearings (1960), p. 462 (testimony of Dr. Thomas Carney).

[42] See W. W. Goodrich ("Cranberries, Chickens, and Charcoal," in F.D.C.L.J. 87 (1960)). Since 1947, there has been a practice to implant pellets of diethylstilbestrol in poultry at the base of the skull for the purpose of synthetic caponization. New drug applications were made effective clearing this use of the drug on the basis of evidence that only a minute amount of residue of the drug would remain in the tissues of treated birds at the time of slaughter. In 1957 the actual residues were calculated and found to be minute. In December 1959, however, Secretary Flemming saw fit to publicly announce that the principle of the Delaney clause was the basis for requesting immediate suspension of the sale of diethylstilbestrol for use in poultry and immediate suspension of the sale of treated birds. Though the Secretary reported that voluntary compliance with his request had been obtained, that only 1 percent of the chickens on the market were affected, and that consumers can buy poultry with full confidence that it is safe and wholesome, nevertheless, the incident was bound to reduce confidence of the public in our food supply.

[43] Hagan, "The Food-Additives Amendment—Its Effect on Veterinary Drugs and Feeds," 15 F.D.C.L.J. 117 (1960); hearings (1960), pp. 465–467 (testimony of Dr. Thomas Carney); C. & E.N., Mar. 21, 1960, p. 19.

[44] The panel of scientists which convened on Apr. 5–6, 1960 (hearings (1960), pp. 685–889) revealed basic differences of opinion on such vital matters as which substances are carcinogens and what tests might be considered appropriate to establish either carcinogenicity or noncarcinogenicity. At one point Dr. G. Burroughs Mide admitted it was theoretically possible to ban salt under the Delaney clause (hearings (1960), p. 738). Dr. Morton L. Levin thought we should not exclude the possibility that commonly occurring substances might in fact be carcinogenic for humans (hearings (1960), p. 797). Roasted

tives law already advanced by Food and Drug Administration which seem to be applicable primarily to veterinary drugs and which make costs of development in relation to possible markets virtually prohibitive.[45] The scope of the exemptions from the food additives law which are to be accorded to existing medicated feeds are so narrow that supposedly exempt drugs are no longer exempt from the food additives law when mixed with new drugs in medicated feeds. Therefore, the manufacturer of a new drug is required to obtain a food additive regulation for not only his own drug but also for every existing drug with which his drug will be mixed, all at enormous expense. Yet, the market for the new drug will probably be very small, indeed, because the Delaney clause will prohibit issuance of a regulation for a new drug added to any existing medicated feed containing diethylstilbestrol or an arsenical.

The cost of the Delaney clause is certainly going to be high. Can our society afford to pay the price?

THE FUNDAMENTAL DEFECT—CONFLICTING POLICIES

Let us now consider how to restore scientific judgment to the evaluation of food and drugs in a framework which provides maximum public health protection.

In my opinion, the problem is not basically the administration of the law. In the past, we have been able to work out problems of administrative interpretation with Food and Drug Administration on a scientific basis, and we can probably continue to do so in the future.[46]

But the basic problem, rather, in my opinion, is legislative. It seems reasonably clear, as previously mentioned, that Congress intended to establish the basic principle that additives whose uses are shown to be safe should be approved for such uses. The policy of the law is stated to advance food technology as well as to protect the consumer. The trouble is that by inserting the Delaney clause into the food additives bill, Congress was, perhaps inadvertently, modifying that policy. As a result of the Delaney clause, in the case of compounds which are suspect as carcinogens under special conditions, manufacturers are not legally permitted to show that such a compound is safe under conditions of use.[47] Inquiry into the actual hazard from the use of the compound is absolutely foreclosed. The law itself makes a prejudgment that safe use of the compound cannot be established.

Now Congress has decided that food technology should be advanced. This is a value judgment. It was a decision that followed 8 years of consideration, numerous hearings, a wealth of articles, and much debate. In order to accomplish this policy, however, it was deemed necessary to abandon the longstanding

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coffee beans contain minute amounts of a strong carcinogen, according to Dr. James A. Miller (hearings (1960), p. 811). The philosophy of the Delaney clause, pushed to extremes would require us all to wear lead armor, to live a subterrestrial existence, to breathe especially filtered and treated air, to drink especially treated water, to refrain from drinking coffee, tea, or eating any foods processed by roasting or smoking, or from consuming most naturally occurring foods, according to Dr. William J. Darby (hearings (1960), p. 834). It is likely that food additives would largely be suspect under the Delaney clause.

[45] Sec. 201(s) of the Federal Food, Drug, and Cosmetic Act defines the term "food additive." The general language is broad enough to include a veterinary drug which is also a new drug pursuant to sec. 201(p) of the act. But sec. 201(s) contains a clause specifically excluding any substance used in accordance with a sanction or approval granted prior to Sept. 6, 1958, under certain statutes, including the Federal Food, Drug, and Cosmetic Act, from the term "food additive." In the case of veterinary drugs which may also be food additives this exemption calls for interpretation. An effective new drug application under sec. 505 of the act is certainly a prior sanction. But under sec. 505 of new drug application is effective only for the manufacturer who obtained it and for the particular conditions of use contained therein. Is the exemption of the drug from the food additives law also so limited? The Food and Drug Administration has argued that it is. Sec. 201(s) also excludes from the term "food additive" any substance which is generally recognized by qualified experts to be safe under the conditions of its intended use. FDA contends this exemption, like the prior sanction exemption, is limited and does not apply to the drug when it is mixed in feed with a newly developed medication. Thus, the same drug may be both exempt and not exempt from the food additives law at the same time and for the same use. See Hagan, "The Food-Additives Amendment—Its Effect on Veterinary Drugs and Feeds," 15 F.D.C.L.J. 117 (1960), and other references contained in footnote 23.

[46] As a caveat, however, this is not to be construed as an implied agreement with the interpretations of the food additives law by the Food and Drug Administration.

[47] Dr. Morton L. Levin, who accepts the Delaney clause, with same latitude, however, in "exceptional circumstances" conceded that this means he would "accept false positives" and knowingly "exclude possibly harmless chemicals from our diet" (hearings (1960), pp. 800–802). This is the necessary effect of the Delaney clause. It is a departure from the announced purposes of the food additives legislation.

per se prohibition against the addition of poisonous or deleterious substances to food. This necessarily meant that Congress was willing to sanction the use of compounds which might be harmful under unusual conditions or in large quantities, but would be beneficial when used under controlled conditions. As a matter of established fact, it is not possible in the present state of scientific knowledge to establish with complete certainty the absolute harmlessness of any substance, under every conceivable condition. However, through the application of scientific judgment, it was concluded that the health of consumers could be protected.[48]

Scientific judgment, however, is in essence the combination of research over a reasonably short period of time with insight as to the probable significance of the results.[49] The scientific method requires that a determination of safety must be independently made for each proposed use of a compound. By freezing present scientific knowledge into law and by prejudging an unknown number of compounds we necessarily depart from the scientific method. Yet there is no reliable evidence that I can find that the Food and Drug Administration cannot make a judgment in each case which is consistent with the public welfare.[50]

Commissioner Larrick had no doubt about the capacity of the Food and Drug Administration when he opposed the concept of the Delaney clause in testimony before the House Committee on Interstate and Foreign Commerce in 1957. He said then:

"But we see no more reason to single out cancer production for specific mention in the legislation than to single out production of high blood pressure, destruction of the blood-forming elements of the body, or production of nephritis, diabetes, or a host of other disorders. All of these things are of extreme importance. We, certainly, do not intend to sanction a chemical additive in the food supply unless the evidence rules out any reasonable ground for believing that the proposed use will constitute a hazard to the public health in any respect."[51]

The panel of eminent scientists who were called upon in 1957 to advise the Committee on Interstate and Foreign Commerce stressed the individuality of each analysis of safety. Summarizing the individual statements of the scientists, Dr. W. J. Darby, of Vanderbilt University, said:

"It was repeatedly emphasized by the participants that each additive, each chemical additive, is a different substance, and, therefore, it presents certain differences in judging the results of testing and in expressing judgment on the safety for the particular use or uses for which this additive is proposed.

"It would seem that in any regulatory procedure there should be an allowance for what we might call individuality of additives—individual appraisal of safety."[52]

Nevertheless, the Delaney clause was incorporated into the food additives bill after the bill had been reported by the Committee on Interstate and Foreign Commerce without any cancer clause. The chairman of the committee reported to Congress that the clause was requested by Congressman Delaney. Congressman Delaney stated that the clause followed the recommendation of the symposium of the international union against cancer held in Rome in 1956 and discussions he had with several cancer researchers. There was very little discussion of the potential effect of this clause on the legislation, but there is some

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[48] Congress rejected the philosophy (except to the degree the Delaney clause restores the per se prohibition of chemicals) of the food faddist who is not willing to accept scientific judgment in the evaluation of food additives. Examples of the food faddist approach are contained in footnote 30. The food faddists were a factor in inducing Congress to institute the food additives investigation that got underway in 1950, according to the former head of the Food and Drug Administration. Dunbar, "Chemical Additives in Food" (6 F.D.C.L.J. 431 (1951)). They were a factor in the pressure which was exerted to enact the Delaney clause and they are now active in order to maintain the integrity of the clause against efforts to restore the basic philosophy of the food additives law. Matson, "Scientific Judgment in Law and Regulation" (15 F.D.C.L.J. 70, 73–76 (1960)). More recently, Representative David S. King, of Utah, read into the record of the Interstate and Foreign Commerce Committee a letter from Dr. Geoffrey Martin, M.D., who wrote: "The Delaney amendment in effect defends one small area of consumer protection which previously was defended by the per se principle" (hearings (1960), p. 414). See footnote 20 for the legislative history of the food additives bill.

[49] See footnote 25.

[50] In fact, a number of the scientists testifying before the Committee on Interstate and Foreign Commerce on Apr. 5–6, 1960, indicated confidence in the ability of the Food and Drug Administration to exercise judgment (hearings (1960), p. 875 (Dr. Paul Cannon), p. 886 (Dr. William J. Darby), p. 743 (Dr. Charles J. Kensler), pp. 723–724 (Dr. Walter S. O'Donnell), p. 825 (Dr. Mitchell Zavon)).

[51] Hearings (1958), p. 454.

[52] Hearings (1958), p. 353.

evidence that the Delaney clause was not thought to alter the basic philosophy of the bill.[53]

In fact, the Senate Committee on Labor and Public Welfare reported:

"In short, we believe the bill reads and means the same with or without the inclusion of the clause referred to. This is also the view of the Food and Drug Administration." [54]

This statement was a monumental miscalculation.

The Delaney clause, clearly, departs from the the philosophy of the food additives law. Its standard of prejudgment reflects the views of some, but not all, cancer researchers—whose experience does not reach into the broader areas of public welfare—and who are impressed mostly with their lack of knowledge of the factors responsible for cancer incidence. Faced with such lack of knowledge, their remedy is to repudiate scientific judgment altogether. Yet, it is generally accepted that thresholds do exist for cancer-causing compounds as for other compounds, and that in doubtful cases, at least, safe tolerances can be set.[55]

Those scientists who take into account the broader aspects of public health, however, have expressed the opinion that the Delaney clause should be modified or entirely deleted. Thus, summarizing the views of several of the members of a scientific panel that appeared before the Committee on Interstate and Foreign Commerce a few days ago, Dr. William J. Darby, Chairman of the Food Protection Committee, and chairman of the panal, said:

"It was indicated yesterday that full protection of the public would be provided without a specific cancer clause." [56]

Dr. Darby indicated this was also his personal opinion.

The conflict in policy created by the Delaney clause was pinpointed by Dr. M. R. Zavon, Kettering Laboratory of Industrial Health, who told the committee:

"* * * the proper question in 1960 is first to determine what is the ultimate object of our food protection laws?

"Is it to protect our population against any conceivable hazard or is it to assure the greatest measure of good to the greatest possible number with a minimum of possible harm to the least number?" [57]

Answering this question, Dr. Zavon said:

"The object is the maximum well being of our population. There is a serious question in my mind whether the Delaney clause will not cause great disruption of the type of research which has gone so far to improve the well-being of our population." [58]

CONCLUSION—RESPONSIBILITY OF CONGRESS

The responsibility of Congress in this situation seems clear. The establishment of policy is the essence of the legislative function.[59] No administrative agency, subject as it is to many pressures, can consistently administer a law whose policies are in conflict.

We may properly expect Congress to determine the policy of the law, and Congress must accept responsibility for the decision which it reaches. Once the facts are obtained, Congress must decide which of the several courses of action serves the total public welfare best.

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[53] The legislative history of the Delaney clause is extensively reviewed by Edward Brown Williams at hearings (1960, pp. 518–542).

[54] S. Rept. No. 2422, 85th Cong., 2d sess., Committee on Labor and Public Welfare, U.S. Senate, Aug. 18, 1958.

[55] Dr. Zavon said (hearings (1960), p. 825): "Most of the fears conjured up with regard to cancer are to the effect that we don't know, therefore, it might cause cancer. Therefore, we can't take a chance." As to the existence of thresholds, see Food Protection Committee, Food and Nutrition Board, "Problems in the Evaluation of Carcinogenic Hazard From Use of Food Additives, publication No. 749, National Academy of Sciences-National Research Council, pp. 31–33. Nearly all the scientists testifying before the Committee on Interstate and Foreign Commerce on Apr. 5–6, 1960, were willing to set tolerances for exceptional or doubtful compounds that might conceivably come under the Delaney clause (hearings (1960), p. 874 (Dr. Charles J. Kensler), p. 875 (Dr. Paul Cannon), p. 879 (Dr. Floyd DeEds), p. 881 (Dr. Morton L. Levin), p. 883 (Dr. James A. Miller), p. 883 (Dr. Albert Tannenbaum), p. 884 (Dr. Mitchell Zavon), p. 885 (Dr. William J. Darby), p. 722 (Dr. Walter S. O'Donnell)).

[56] Hearings (1960), p. 836.

[57] Hearings (1960), pp. 821–822.

[58] Hearings (1960), p. 827.

[59] *Mutual Film Corporation* v. *International Commission of Ohio*, 236 U.S. 230 (1915); *Panama Refining Co.* v. *Ryan*, 293 U.S. 388 (1935); *Opp Cotton Mills Inc.* v. *Administrator of Wage and Hour Division*, 312 U.S. 126 (1941).

It is submitted that the basic policy of the law has already been determined. This is to achieve maximum well being by advancing food technology as well as by protecting the consumer from harm through the application of scientific judgment.

As written, the Delaney clause precludes scientific judgment, and frustrates the basic policy of the law. It is imperative that to achieve the maximum well-being of our Nation the Delaney clause must be eliminated or amended so as to permit the use of safe compounds.

Congress is now considering the Delaney clause. The forum is the Committee on Interstate and Foreign Commerce. The subject is color additives. But it is the food additives law which is actually on trial. This matter should receive serious attention from the animal health industry. For the decision which Congress will make will be based upon the information with which its members have been supplied.

We of the Animal Health Institute are deeply concerned with the public health. Speaking for my company, we would not think of marketing any drug which is likely to cause harm. But we don't think the public welfare is served in the 20th century by abandoning scientific and technological progress which has given this Nation the highest standard of living in the world.

B & D MILLS,
Grapevine, Tex., March 26, 1960.

Hon. LYNDON JOHNSON,
U.S. Senate, Washington, D.C.

DEAR SENATOR JOHNSON: It is my understanding that H.R. 7624 is concerned with the use of additives to impart color to foods, drugs, and cosmetics. I also believe H.R. 7624 includes a so-called cancer clause known as the Delaney amendment. This amendment prevents the exercise of scientific judgment. It imposes a flat prohibition on the use of any substance which has been proven safe as used, but which can be made to produce cancer when ingested by animals, even if the dose is a million times that for its intended use or if experimental conditions are totally unrelated to actual use.

By imposing a flat prohibition on additives which can be made to cause cancer under laboratory conditions unrelated to practical use, this prevents the use of otherwise valuable substances.

The "spirit" of the Delaney amendment stifles agricultural research. By so doing, it slows progress in agriculture, and eventually would restrict the supply of quality food and fiber necessary to feed an exploding population. In the last analysis, the Delaney amendment works against the general public interest.

If something like the Delaney clause is used, it should be modified to allow scientific judgment by the Food and Drug Administration. Such a modification could read as follows: "A color additive shall be deemed unsafe * * * if the additive is found in amounts under conditions reasonably related to the intended use to induce cancer when ingested by man or animal."

This modification would not take any power away from the FDA. The FDA would apply the same scientific scrutiny to substances coming under the Delaney amendment as they now apply to all other additives. The manufacturer of an additive would still be required to demonstrate the safety of each additive to the satisfaction of the FDA.

We also believe that substances cleared under the food additives law should not have to be cleared under the color law. We believe that it is most important to clearly separate the color amendment from the food additives amendment.

The basic issues and principles involved in the color additives legislation are not in the best interest of the feed manufacturing industry or of our general economy. Many food additives now in common use significantly reduce the cost of producing a pound of meat, a gallon of milk, or a dozen eggs. Stifling further research by legislation like the Delaney clause will cause a sizable increase in the cost of food to the American public. We hope that the Delaney clause can be modified to allow for scientific judgment in determining which food and color additives are safe when used under conditions reasonably related to their intended use.

Sincerely yours,

L. E. DEACON.

FEBRUARY 16, 1960.

Re S. 2197 and H.R. 7624.

Hon. OREN HARRIS,
Chairman, Interstate and Foreign Commerce Committee,
House of Representatives, Washington, D.C.

MY DEAR MR. CHAIRMAN: Smith Kline & French Laboratories is a Pennsylvania corporation engaged in the manufacture and sale of ethical pharmaceutical products. These products, which we sell in substantial volume, incorporate a wide variety of colors used for the purpose of identification, designation of strength, and other purposes related to public health and safety.

We, along with 140 other drug companies, are members of the Pharmaceutical Manufacturers Association and support the position so ably presented by Dr. Carney and Messrs. Williams and Worley at the hearing on February 11, 1960. We believe that new legislation permitting the use of color additives in drugs is necessary and that this legislation should be in the form of S. 2197 with the important amendments suggested in part I of Mr. Worley's letter dated February 8, 1960.

We have prepared a booklet, which has already been submitted to the committee by Mr. Worley, showing how colors in drugs serve a vital health purpose. This booklet contains over 100 letters from physicians, hospital officials, deans of pharmacy schools, boards of pharmacy members, pharmacists, and others with whom we have been in touch. A list by States of these persons, together with a summary of their statements, is attached to this letter.

The most controversial issue before the committee is the adoption of the arbitrary rule imposed by the present wording of the Delaney amendment. We believe there are serious weaknesses in the argument that once a given color additive has been shown to produce cancer in a single strain of animals, the danger of its use in human beings has been demonstrated. These weaknesses can be summarized as follows:

1. As in the case of diethylstilbestrol, the substance may have been shown not to produce cancer in most other animals or in human beings themselves.
2. Threshold levels are ruled out even if they can be safely established.
3. A single test is set up which may be entirely at variance with the best scientific judgment.
4. Congress would be inconsistent in permitting the Food and Drug Administration to make the determination of safety in all danger areas other than cancer. In effect, it would rely on the FDA in most medical areas but would deny the administration's competency in the field of cancer.

If the committee favors a clause highlighting the danger of cancer, we suggest a provision which would permit the decision as to the safety of a color additive to the based on the best scientific evidence available. The PMA has submitted a modification of the present Delaney clause which would accomplish this. We heartily support this modification which appears in part II of Mr. Worley's letter.

Very truly yours,

SMITH, KLINE & FRENCH LABORATORIES,
By ADDISON S. ELLIS, *Vice President.*

LIST OF PEOPLE WRITING TO SKF RE COLOR ADDITIVES

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South Carolina

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Wilkins Harden, vice president, American College of Apothecaries, Hampton at Bull, Columbia, S.C.
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West Virginia

J. Lester Hayman, dean, West Virginia University, Morgantown, W. Va.
William J. Dixon, secretary-manager, West Virginia State Pharmaceutical Association, Post Office Box 119, Oak Hill, W. Va.

Wisconsin

Louis W. Busse, associate dean, the University of Wisconsin, Madison, Wis.

SUMMARY OF LETTERS COMPRISING BOOKLET ENTITLED "MATERIALS SUBMITTED BY SMITH KLINE & FRENCH LABORATORIES RE S. 2197 AND H.R. 7624, FEBRUARY 11, 1960" FILED BY MR. WORLEY ON BEHALF OF THE PHARMACEUTICAL MANUFACTURERS ASSOCIATION

1. Where a patient is taking more than one drug, color helps him distinguish them. This is particularly true in the case of elderly and illiterate people.
2. Coloring of drugs may be a lifesaving device in case of overdosage and accidental poisoning because it permits rapid and accurate identification of the drug without the necessity of long chemical analysis.
3. Coloring of drugs helps to eliminate serious errors by nurses and others who administer drugs to patients in hospitals, particularly in State hospitals where use is made of subprofessional personnel whose knowledge of drugs is limited. Normally, the medication is sent to them for distribution apart from the labeled container so that there is always a possibility of accidental intermingling.
4. Coloring makes a drug more acceptable and pleasant for patients, especially children. This increases the likelihood that a given patient will continue with needed medication.

5. Patients occasionally develop allergies to one of the medications they are taking. If the medication is colored or carries other color markings, it is easier to identify the medication causing the allergic reaction.

6. A patient may already be taking medication the first time a doctor sees him. Color helps the doctor identify such medication and prescribe the course of treatment.

7. Doctors often check on the medication the patient is taking to make sure it is what has been prescribed. The use of colors and markings makes this possible. In talking to a patient on the telephone, color helps the patient describe his medication.

8. Many drugs have a repellent natural color. Other drugs change color over a period of time without loss of therapeutic effectiveness. This may cause unfavorable patient reaction. A stable color would prevent this.

9. Coloring to indicate dosage strengths serves as a safety check for the pharmacist in filling prescriptions. Dots and other markings used for this purpose require inks which are also color additives.

10. A number of pharmacists write on the back of the doctor's prescription the color of the medication used as a check on the accuracy of refills.

11. Pharmacists frequently transfer drugs from the bottles in which they purchase drugs to stock bottles. Color serves as a safety check in making sure the right medication is placed in the proper bottle.

12. Colors serve as an additional safety check in preventing accidental mishaps in manufacturing and packaging.

SMITH KLINE & FRENCH LABORATORIES,
RESEARCH AND DEVELOPMENT DIVISION,
Philadelphia, Pa., April 20, 1960.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
The Capitol, Washington, D.C.

DEAR MR. HARRIS: H.R. bill 7624 dealing with color additives legislation, because of its "anticancer clause," the Delaney amendment, may throw an insurmountable obstacle in the path of valuable chemical and pharmaceutical additive research. This bill, in its present form, would completely ban the use of all substances, including food additives which are capable of imparting color, which have produced cancer in animals under abnormal feeding or laboratory conditions although they may be safe when used as instructed.

The effect of this may be that many potenially valuable substances will never be made available to the consumer. For example, under the existing Delaney amendment to the Food Additive Act of 1958 (after which the cancer clause in H.R. 7624 is patterned), the FDA has not allowed any new drug applications on diethylstilbestrol to become effective. Diethylstilbestrol is a hormone fed to cattle in feed supplement form at the recommended rate of 10 milligrams per animal daily. Only selected strains of susceptible animals could be used, e.g., Syrian hamsters, guinea pigs, and even in these many of the tumors have no counterpart in human beings. It is estimated that at present there are about 300,000 women in the United States taking diethylstilbestrol for a number of different conditions in which it is a valuable means of therapy. The normal dose of diethylstilbestrol in women is 0.5 to 5 milligrams daily, with the dosage period ranging up to years. Any undetectable amounts of diethylstilbestrol ingested through the consumption of meat from animals fed a diethylstilbestrol-containing feed supplement would be totally insignificant when related to these normal therapeutic dosage levels.

It is, of course, mandatory that there be governmental control over potentially harmful chemical substances which are sold to the public. However, if a manufacturer is able to prove to the satisfaction of the Food and Drug Administration, the Government clearinghouse, that a particular chemical is indeed safe (according to qualified specifications) when administered and used properly, then he should be permitted to sell this product. By imposing a flat prohibition on additives which can be made to cause cancer under laboratory conditions unrelated to practical use, the Delaney amendment prevents the use of otherwise valuable substances.

Therefore, it is proposed that a phrase be added to the Delaney amendment making it more workable from the point of view of the general public. The additional wording would protect the public from the cancer-producing agents but would allow the FDA to exercise scientific judgment in the appraisal of new additives for food, drugs, and cosmetics.

The proposed addition is printed in italic:

"A color additive shall be deemed unsafe * * * if the additive is found to induce cancer when ingested by man or animal, *in an amount and under other conditions reasonably related to its intended use*, or if it is found, after tests which are appropriate for *the* safety of the additive for *its intended use*, to induce cancer in man or animal."

Sincerely yours,

R. F. DEE,
Manager, Animal Health Products Department.

WASHINGTON, D.C., *May 18, 1960.*

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House Office Building,
Washington, D.C.

DEAR MR. CHAIRMAN: Enclosed for your information is a copy of a statement submitted on behalf of the Pharmaceutical Manufacturers Association as a supplement to my testimony before the Interstate and Foreign Commerce Committee on February 11, 1960, concerning the anticancer provision of H.R. 7624, the color additives bill.

The statement comments upon certain questions which have arisen as a result of the discussion of the expert scientific panel before the committee on April 5 and 6, 1960, Secretary Flemming's testimony of May 9, and the report of the President's Science Advisory Committee (the Kistiakowsky report) released by the White House on May 14.

The statement points out the basic inconsistency between the position of the Department of Health, Education, and Welfare, which opposes any modification of the anticancer clause, and the views expressed in the Kistiakowsky report and by the most of the panel of experts who appeared before the Interstate and Foreign Commerce Committee. The Kistiakowsky report and the majority of the committee's panel favor such modification of the anticancer clause as would permit appropriate exercise by the Food and Drug Administration of scientific judgment as to the safety of food additives which are found to induce cancer in some animals under given test conditions.

I would be grateful for your consideration of the analysis of this matter in my supplementary statement. We would appreciate inclusion of the supplementary statement and the accompanying enclosure in the record of the hearings on H.R. 7624.

Sincerely,

EDWARD BROWN WILLIAMS.

SUPPLEMENTARY STATEMENT OF EDWARD BROWN WILLIAMS ON BEHALF OF PHARMACEUTICAL MANUFACTURERS ASSOCIATION, CONCERNING THE ANTICANCER CLAUSE OF H.R. 7624

Since the position of the interested industries was presented to the Interstate and Foreign Commerce Committee on the so-called anticancer clause of the proposed color additives bill (H.R. 7624) there have been presented to your committee the views of a distinguished panel of experts assembled by the committee (hearings of April 5 and 6, 1960) and additional testimony of the Honorable Arthur S. Flemming, Secretary of Health, Education, and Welfare (May 9, 1960).

More recently, on May 14, 1960, the White House released the report of a study of the problem posed by the proposed anticancer provision of H.R. 7624 and the Delaney clause of the food-additives amendment to the Federal Food, Drug and Cosmetic Act. The study was made by the Departments of Agriculture and Health, Education, and Welfare and the President's Science Advisory Committee. The White House release recites that the report of the study group was approved by the President's Special Assistant for Science and Technology, Dr. George B. Kistiakowsky, and also concurred in by the Departments of Agriculture and

Health, Education, and Welfare. The group which submitted the report is hereinafter referred to as the Kistiakowsky panel.

We take this opportunity to submit, on behalf of the Pharmaceutical Manufacturers Association, certain comments on the testimony and report in question, as a supplement to the testimony presented on behalf of the association on February 11, 1960.

It is evident from a study of the report of the Kistiakowsky panel and of the opinions expressed by most of the members of the panel which appeared before your committee that these groups do not share the views of the Department of Health, Education, and Welfare, that the anticancer clause as it now appears in the food-additives amendment and in H.R. 7624, is scientifically sound.

The significance and application to the problem before the committee of the findings of the Kistiakowsky panel, the most recent expression upon the matter, are first considered.

I. THE REPORT AND RECOMMENDATIONS OF THE KISTIAKOWSKY PANEL

Among the recommendations of the panel are the following:

(1) That the Secretary of Health, Education, and Welfare appoint an Advisory Board "to assist him in the evaluation of scientific evidence on the basis of which decisions have to be made prohibiting or permitting the use of certain possibly carcinogenic compounds," including evidence relating both to applications for approval of new food additives and to cases where the withdrawal of a prior approval or sanction is under consideration. The Board would consider, among other matters:

(*a*) Whether or not the tests for carcinogenicity are appropriate and reasonable,

(*b*) Whether the substance is nor is not in reality carcinogenic as determined histopathologically or by other criteria.

(2) "If existing legislation does not permit the Secretary of Health, Education, and Welfare to exercise discretion consistent with the recommendations of this report, it is recommended that appropriate modifications in the law be sought."

The key words in the second recommendation, just quoted, are "discretion consistent with the recommendations of this report." Unfortunately, in order to determine whether this recommendation means that a modification of the Delaney clause is being advocated, it is necessary to review the statements and conclusions upon which the recommendation is based. But it seems clear, initially, that a rigid legislative test such as that of the anticancer clause with its severe limitation of the exercise of scientific judgment, itself precludes the use of "appropriate and reasonable" tests of carcinogenicity, within the meaning of 1(*a*) above.

The report states, with respect to the Delaney clause:

"The panel subscribes to the intent of the Congress in approving this section of the food-additives amendment to protect the public from increasing cancer risks through the diet. However, there are certain difficulties in its practical application—difficulties which give rise to many uncertainties both on the part of the public and those whose responsibility it is to administer the law" (p. 3).

The industry also, as it has demonstrated, endorses this intent of protecting the public. The problem is solely one of method.

It is said, in part 2 of the report, referring to the use of cancer-inducing substances, as affected by the section of the food additives amendment containing the Delaney clause (sec. 409(3)(c)(A) of the Food, Drug, and Cosmetic Act, that—

"A literal interpretation of the section must lead to the prohibition of such a substance even though present in trace amounts."[1]

* * * * * * *

"For a number of carcinogens that have been studied, however, there is evidence for the existence of a level of ingestion at which no carcinogenesis occurs during the life of the animals when tested in limited numbers" (p. 6).

Dose-response curves for certain potent carcinogens in animals have been worked out, the report states, "from which can be reliably predicted the probability of an individual, in a given sized population, developing a tumor from a given dose of carcinogen." And—

[1] This is of course, the interpretation made by the Secretary.

"Such curves lead to the conclusion that dietary levels of carcinogenic agents exist at which the probability of cancer induction in animals is near zero" (p. 6).

The report then cites evidence which indicates that a dose-response relation for certain carcinogens exists in man—that is, that the safety of the carcinogen for use in human food is related to the amount ingested. Foodstuffs containing traces of chemicals which in larger amounts are generally accepted as carcinogenic but which are not suspect in trace quantities, are mentioned; other situations and evidence are referred to which indicate that the incidence of cancer in man is related to the duration and amount of exposure to carcinogens (pp. 6 and 7).

It is concluded that—

"From the experience obtained in animal experiments and study of humans who have been exposed to carcinogens in the course of their work such as cited above, the panel believes that the probability of cancer induction from a particular carcinogen in minute doses may be eventually assessed by weighing scientific evidence as it becomes available" (pp. 6 and 9).

Specifically, in part 3 of the report it is pointed out that—

(1) Selenium, which is carcinogenic in animals when consumed for long periods in considerable amounts, is reported to be an essential nutrient element in the diet of lambs.

(2) Inorganic arsenic (some compounds of which have been indicated as carcinogenic) is released when organic arsenicals are added to animal feed.

(3) Minute traces of polyethylene stearate in the human diet "are not likely to produce bladder cancer, and can be treated as any other toxic material," despite the fact that, when fed to rats at a level of 25 percent of the diet (but not at lower levels) this substance produced urinary bladder stones "which induced bladder tumors, some malignant."

This list of examples, the report states, may be expected to lengthen "and each case requires scientific judgment to determine the issues involved" (p. 7). It will be seen from example number (3) that the committee has already "weighed the scientific evidence" relating to polyethylene stearate, or it could not have concluded that it "can be treated as any other toxic material."

It is thus apparent that the Kistiakowsky panel believes that scientific judgment in assessing the safety of carcinogens or suspected carcinogens should be brought to bear, not only in determining whether such substances cause cancer in animals, but also in deciding whether the use of such a substance in the amounts proposed would be carcinogenic (1) in animals, and (2) in man. Secretary Flemming has testified before your committee that the only permissible exercise of judgment is in the area of determining whether a given substance has caused cancer in the diet of test animals, thus foreclosing consideration of the fundamental question of whether under different conditions and in different (smaller) dosages it would have the same effect in animals or, more importantly, in man.

The report advocates application of the "rule of reason" to determinations of the safety of food additives, including carcinogens and suspected carcinogens. It is difficult to understand how foreclosure of any consideration of the safety of certain substances naturally occurring in foods (the panel named inorganic arsenic compounds, radium, and selenium) on the ground that they cause cancer in some animals under specified test conditions, could be regarded as consistent with the panel's standard that the rule of reason should govern determinations of the safety of such substances when added to foods. It must be concluded that the approach of Secretary Flemming is not consistent with that of the Kistiakowsky panel and that its recommendation No. 2 (above quoted) means that the Delaney clause should be modified to permit recourse to such a rule.

Moreover, the specific declaration in the report, which we have noted, that a substance which causes bladder stones resulting in cancer can, when used in minute amounts, "be treated as any other toxic material," is inconsistent with the view of the Secretary, which would preclude any consideration of the safety of such a substance.

It is evident, therefore, that the legislative test of whether a substance causes cancer in animals under test conditions must be modified if effect is to be given to the recommendations of the Kistiakowsky panel. Since, as the report states, "dietary levels of carcinogenic agents exist at which the probability of cancer induction in animals is near zero" (p. 6) it is not reasonable (within the mean-

ing of the report) to exclude from examination and the application of scientific judgment (as Secretary Flemming would do), the question of whether, in man, a given level of use of a carcinogenic agent might be safe.

Thus, there seems to be no doubt of the intent of the report of the panel, despite the imprecise language in which its final recommendations are expressed.

II. THE RECOMMENDATIONS OF MEMBERS OF THE PANEL ASSEMBLED BY THE INTERSTATE AND FOREIGN COMMERCE COMMITTEE

The statements of the panel of scientific experts at a hearing held by your committee on April 5 and 6, 1960, were more specific than was the report of the Kistiakowsky panel. In the hope of aiding the committee in its consideration of the problem of the anticancer clause as it appears in H.R. 7624, we have prepared the enclosed summary (enclosure A) of the views of the 13 experts who addressed themselves to the question whether that clause should be modified. This summary, which is keyed to the pertinent record references, shows that only 3 of the 13 experts in question (Drs. Mider, Stewart, and Blum), supported Secretary Flemming in his position against modification. One (Dr. Shubik), advocated modification but seemingly agreed with the Secretary that a substance should be deemed unsafe if it causes cancer in animals, regardless of considerations dosages and other conditions of use. The other nine experts favored modification of the Delaney clause to the extent necessary to permit the exercise of scientific judgment in determining the safety of all substances proposed for use in food since, in extraordinary cases, there might be justification for the establishment of tolerances for substances which are found, under certain conditions, to induce cancer in animals. These experts, like the Kistiakowsky panel, would not limit the exercise of judgment to the question whether a given substance induces cancer in test animals.

III. COMPARISON OF VIEWS OF THE KISTIAKOWSKY PANEL, THE COMMITTEE PANEL, SECRETARY FLEMMING, AND THE INDUSTRY

(1) Both the Kistiakowsky panel and the great majority of the panel of experts assembled by your committee have, therefore, refused to limit the principle of "exercise of scientific judgment" as Secretary Flemming advocates. The same position has been taken in testimony presented to your committee by the interested industries. It was, therefore, with some surprise that we found Secretary Flemming declaring, in his testimony of May 9, that—

"The rallying point against the anticancer provision is the catch phrase that it takes away the scientist's right to exercise judgment. The issue thus made is a false one, because the clause allows the exercise of all the judgment that can safely be exercised on the basis of our present knowledge."

In substance then, the committee is faced with a conflict of views between Secretary Flemming on the one hand and the Kistiakowsky panel and most of the panel assembled by your committee, on the other.

It was emphasized by some members of your committee's panel that a rigid test which allows for no scientific judgment once it is found that a substance induces cancer in animals under certain conditions, should not be incorporated into legislation. Such a test, it was pointed out, tends to discourage research generally. Specifically, it retards research efforts to shed further light upon the very question posed by the controversy under discussion: Whether and to what extent, in the case of a given substance, dosage and other conditions of use will determine the capacity of the substance to induce cancer. We respectfully submit that, for this reason alone, it is unwise legislative policy to establish a test of safety of such rigidity as that resulting from the administrative interpretation of the Delaney clause and its counterpart in H.R. 7624.

(2) The question arose when Secretary Flemming testified on May 9, whether the burden was on the industry to prove that a food additive will not induce cancer. We want to avoid any misunderstanding which may have arisen on this point. There are two aspects of the question.

First, the basic burden of testing to show safety is upon the industry. This is entirely clear from the language of the food additives amendment and H.R. 7624. If suspicion of carcinogenicity is involved with respect to a particular substance, it is equally clear that an additional burden of disproving specifically that the substance is carcinogenic likewise falls upon the industry, without regard to whether the substance has been shown to induce cancer in animals under given test conditions. In the event, however, that the substance is found to induce

cancer in animals under such conditions, it is evident that no question of proof arises at all since the substance is absolutely banned from use in food by reason of the operation of the Delaney clause as administratively applied. This is the legal situation which exists today.

Secondly, substances which have heretofore been found by the Food and Drug Administration to be safe under the new drug provisions of the statute (sec. 505), such as Diethylstilbestrol and certain arsenicals, may be used under the prior approval or prior sanction provisions of the food additives amendment, by the persons who obtained such prior approvals. But such substances, although already found to be safe, cannot be used by other persons who did not obtain approval of their use before January 1, 1958, because of the application of the Delaney clause by the Department of Health, Education, and Welfare.

Under these circumstances it is immaterial whether the burden of the industry is stated in terms of proof of a negative or is characterized in some other manner. The burden is there and, insofar as we can see, cannot be met under any reasonably circumstances because of the present policies of the Secretary under the anticancer provision.

IV. INDUSTRY PROPOSAL

It was proposed, in testimony on behalf of the Pharmaceutical Manufacturers Association, with the endorsement of other industry witnesses, that the anticancer clause of H.R. 7624 be amended to read as follows:

SECTION 706(b)(5)(B)

"A color additive (1) shall be deemed unsafe, and shall not be listed, for any use which will or may result in ingestion of all or part of such additive, if the additive is found to induce cancer when ingested by man or animal, *in an amount and under other conditions reasonably related to its intended use*, or if it is found, after tests which are appropriate for the safety of *the* additive for *its intended use*, to induce cancer in man or animal * * *"

We renew this suggestion for the consideration of the committee. It is substantially consistent with the prevailing points of view heretofore discussed. It is more restrictive than the position heretofore taken by the Department of Health, Education, and Welfare as stated by former Assistant Secretary Richardson in a letter to the chairman of the committee, dated August 8, 1958, which read, in part, as follows:

"To single out one class of diseases for special mention would be anomalous and could be misinterpreted. Hence, in drafting the Department's bill we chose general language that would restrain any use of an additive that would have any adverse effect on the public health * * *"

We stand ready to render such assistance to your committee on the problem discussed in this statement as appears to you to be appropriate.

VIEWS OF EXPERTS ASSEMBLED BY THE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE APRIL 5 AND 6, 1960

Dr. DARBY (chairman of panel). Would modify Delaney clause to permit exercise of scientific judgment and, in exceptional situations, the establishment of tolerances for substances which induce cancer in animals under vertain conditions (R. 835–838, 885), with provision for referral of controversial problems to expert panel (R. 836).

Dr. MIDER. Would not modify Delaney clause or permit establishment of tolerances at the present time (R. 873).

Dr. STEWART. Agrees with Dr. Mider (R. 873).

Dr. BLUM. Considers Delaney clause necessary (R. 877).

Dr. KINSTER. Would modify Delaney clause to permit establishment of tolerances in exceptional situations, in exercise of scientific judgment. Should not have to wait for new legislation where situations arise justifying tolerances (R. 873–874).

Dr. CANNON. Would modify Delaney clause to permit exercise of scientific judgment as to safety of use under given conditions. See no hazard in entrusting decisions in this area to Food and Drug Administration (R. 875–876).

Dr. DE EDS. Would modify Delaney clause to permit establishment of tolerances in exceptional situations (R. 880).

Dr. LEVIN. Would favor provision permitting final decision by scientific panel, in exceptional instances, on question of whether there should be a tolerance.

Dr. MILLER. Would modify law to provide that, in unusual situations where the question of hazard is in dispute, the Secretary should seek the opinion of a board of experts, and should then make the final decision as to whether a tolerance should be established (R. 883).

Dr. TANNENBAUM. The Delaney clause should be retained but should include a provision for review of controversial problems by a scientific panel "and only for special borderline problems should the Food and Drug Administration give consideration to tolerances" (R. 883).

Dr. ZAVON. Would modify Delaney clause by eliminating provision relating to safety of substances found to induce cancer in man or animal. Agrees with Dr. De Eds (R. 884).

Dr. O'DONNELL. Unwise to single out cancer for special consideration in legislation. Decision whether to set tolerance should be one of scientific judgment, not of legislation (R. 722).

Dr. SHUBIK (by letter to Dr. Darby). "It is not possible to determine the tolerance dose of an established carcinogen on an experimental basis. In spite of this the Delaney clause cannot be defended since the phraseology used is too broad and may well encompass agents that might not be considered to be truly carcinogenic by any panel of experts in the field." It would be sufficient if all additives were required to be subjected to test procedures adequate to detect carcinogenic action, with the results to be evaluated by committee of experts (R. 831).

CHAS. PFIZER & CO., INC.,
MANUFACTURING CHEMISTS,
Brooklyn, N.Y., March 16, 1960.

Re S. 2197 and H.R. 7624.

Hon. OREN HARRIS,
Chairman, Interstate and Foreign Commerce Committee, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: The representatives of the pharmaceutical industry who testified before your committee on February 10 and 11 spoke at some length about the inequitable situation which has developed with regard to the use of diethylstilbestrol (DES) and certain arsenical compounds in animal feeds. The principal inequity which these witnesses brought out is the fact that those feed manufacturers who received, prior to passage of the food additives amendment, effective new drug applications for feeds containing either DES or those arsenicals which are still new drugs, can continue to market such feeds, but that the Department of Health, Education, and Welfare refuses to make effective any additional new drug applications for feeds containing these drugs.

Consequently, we have the anomalous situation of some feed manufacturers being permitted to manufacture feeds containing DES and those arsenicals, while other feed manufacturers are barred from doing the same thing.

This situation results from the interplay between the "prior sanction" exemption from the definition of the term "food additive," and the per se prohibition of the Delaney amendment in the food additives amendment, as those provisions are interpreted by the Department.

While it is manifest that the effects of the above interpretation on the use of DES and arsenicals in animal feeds are inequitable, we submit that its effect on virtually all newly developed drugs for feed use is even more inequitable and merits most careful consideration by your committee.

A brief explanation of the effect of the above interpretation on newly developed drugs is necessary at this point:

Today, between 70 and 80 percent of all manufactured broiler feeds contain arsenicals either to promote growth or to prevent the disease coccidiosis. A high percentage of swine feeds also contain arsenicals. Similarly, about 80 percent of manufactured cattlefeeds today contain DES to stimulate growth and improve feed efficiency. Under the Department's interpretation, these high percentages of such feeds can continue to be marketed, provided there are no changes in composition, manufacturing procedures, labeling, etc., which would be significant from the standpoint of safety.

Because DES and the arsenicals are quite effective, and relatively inexpensive, it is not likely that their use by feed manufacturers will decline for a considerable period of time to come. Consequently, when a new drug is developed by Pfizer or by another company for use in feeds produced by these manufacturers, if its sale is to be successful, it must be added to the 70–80 percent of the ex-

empted feeds which already contain DES or arsenicals. The combination of a newly developed drug with either DES or arsenicals in feed is, however, a new drug, and cannot be marketed until the Department makes effective a new drug application for such combination. Because of its aforementioned interpretation, however, the Department is refusing to make effective any new drug applications for such combinations.

The practical effect of this interpretation is to bar automatically the use of any newly developed drug in 70–80 percent of the manufactured animal feeds marketed today.

When the cost of research and development of such new drugs, and of obtaining the data necessary for clearance by the Department is considered in the light of the small percentage of feeds in which it is presently possible to obtain clearance by the Department for use of such drugs, it is quite apparent that drug manufacturers must drastically curtail research and development work on such drugs.

A few concrete illustrations will serve to make the above comments more evident:

(*i*) Pfizer has spent at a conservative estimate $400,000 to develop a new antibiotic for use alone and in combination with other drugs in poultry feeds as a growth stimulant. There is not included in this estimate the very substantial expenditure which we have made to develop data to demonstrate advantages over competitive products, and other data required for sales reasons. Oleandomycin Premix was the result of that research. Although FDA cleared Oleandomycin Premix for use, as the sole drug ingredient, in feed under the new drug procedure on May 5, 1959, and cleared Oleandomycin Premix in swine feeds also containing Terramycin on July 7, 1959, and although oleandomycin is an exceedingly good growth stimulant, we have not even commenced sale of this product to date. Our delay in commencing sale has been primarily due to the commercial need to incorporate oleandomycin in the 70–80 percent of feeds which also contain arsenicals, and FDA's unwillingness, because of its above-mentioned interpretation, to grant such clearance. This is particularly disturbing when you consider that the use of these arsenicals, in combination with a number of older antibiotics, was cleared by FDA prior to the amendment, and those combinations are widely used today.

(*ii*) Pfizer has spent at a conservative estimate $200,000 to develop Tran-Q Premix for use, primarily with DES, in cattle feeds as a growth stimulant. There is not included in this estimate the very substantial expenditure which we have made to develop data to demonstrate advantages over competitive products, and other data required for sales reasons. Although we obtained new drug clearance for Tran-Q Premix, as the sole drug ingredient, in feed on August 13, 1958, and cleared Tran-Q in feeds also containing terramycin on April 15, 1959, and although Tran-Q significantly increases the growth stimulating effect of feeds containing DES, our sales of Tran-Q Premix to date are materially less than its research costs. Our low sales result because FDA, under its aforementioned interpretations, will not clear the use of Tran-Q in the 70 percent of cattle feeds which contain DES. Again, this is all the more disturbing in view of the fact that DES for use alone, and in combination with various other drugs, was cleared by FDA prior to the amendment, and those combinations are in wide use today.

(*iii*) Pfizer has spent $300,000 to $400,000 so far in the development of GS–1777 a most promising new coccidiostat. We would need to spend between $230,000 and $300,000 to obtain the data necessary for FDA clearance for this product. Because we realize that we will be unable to obtain FDA clearance for its use in feeds containing arsenicals under FDA's present interpretation, we are contemplating discontinuation of further development work on this product.

We have used Pfizer new drugs in the above examples, but other pharmaceutical manufacturers are undoubtedly also in a position to furnish similar examples involving their newly developed drugs.

It is important to note that the above interpretation virtually assures those manufacturers who obtained clearance by the Department for marketing various drugs in feeds which also contain DES or arsenicals, prior to the food-additives amendment, that they will be free from competition from new developed drugs.

Pfizer has been a leader in research for drugs to improve growth, feed efficiency, and fight disease of animals.

During the past several years, we have been spending approximately $1.4 million per year for research and development at our agricultural research farm for products to improve animal health and nutrition. This farm is located on our plant site, comprising 1.865 acres at Terre Haute, Ind. In addition, we have been spending about $154,000 for research by our parasitology research department at Maywood, N.J., concerned with discovery of drugs effective against coccidiosis and other animal diseases. The obstacles to successful marketing of new drugs for feed use, which have resulted from the interpretation which we have been discussing have been so drastic, that Pfizer has severely curtailed research in this field.

The drugs which have already been developed by Pfizer and others in our industry have contributed greatly to the present abundance, at reasonable prices, of meat, milk, and eggs in this country. The modern feed lot and broiler raising operations which have reduced so substantially the cost of raising livestock and poultry, would not be practicable without these drugs. New and improved drugs will be necessary for further advancements. Unless appropriate legislative and/or interpretative revisions are forthcoming without delay it is our belief that the need for such drugs will not be met.

We do not want to create the impression that we believe the Department is being arbitrary or unfair in its dealings with us or other members of our industry. We have the utmost admiration for the personnel of the Department, and we regard them as highly competent and fair. It has been our intention in this letter merely to point out the inequities which have arisen out of the Delaney amendment, as interpreted by the Department.

In view of the above, as well as for the reasons outlined by Dr. Carney, Mr. Williams, and Mr. Worley during their testimony on February 11, Pfizer submits that the cancer clause in proposed section 706(b)(5)(B) on page 10 of H.R. 7624 should not be enacted. If your committee believes that a cancer clause should be included in color-additives legislation, then we submit that such a clause should read as follows:

"(B) a color additive (i) shall be deemed unsafe, and shall not be listed for any use which will or may result in ingestion of all or part of such additive, if the additive is found to induce cancer when ingested by man or animal in an amount and under other conditions reasonably related to its intended use, or if it is found, after tests which are appropriate for the evaluation of the safety of the additives for its intended use, to induce cancer in man or animal, and (ii) shall be deemed unsafe, and shall not be listed, for any use which will not result in ingestion of any part of such additive if, after tests which are appropriate for the evaluation of the safety of additives for such use, or after other relevant exposure of man or animal to such additives, it is found to induce cancer in man or animal."

We also submit that he so-called Delaney amendment (sec. 409(c)(3)(A)) in the Food Additives Amendment should be similarly amended.

Whether or not this suggested revision of the Delaney amendment if enacted, would overcome the inequitable situation described throughout this letter will depend, of course, upon how it is interpreted and administered by the Department. It is our hope that if the suggested revision is enacted the report of your committee will contain appropriate statements to guide the Department toward interpretation and administration which will overcome this situation.

Respectfully submitted.

ALLAN J. GREENE,
Administrative Vice President.

WILMER & BROUN,
Washington, D. C., February 26, 1960.

Re color-additives amendment to the Federal Food, Drug, and Cosmetic Act, H.R. 7624 and S. 2197

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: On behalf of the Certified Color Industry Committee, spokesman for the industry most directly concerned by the proposed color-additives legislation, I respectfully request that this letter, commenting on matters occurring after Mr. Schramm's appearance before your committee on January

27, 1960, be included in the record of the hearings. Sufficient copies of this letter are enclosed for all members of your committee and for its professional staff.

1. THE COLOR ADDITIVES WHICH WILL BE REGULATED DO NOT PRODUCE CANCER

A few statements were made in the hearing on February 11 which may be construed as inferring or asserting that some color additives may produce cancer. Those statements are set forth in the appendix to this letter.

The facts are to the contrary. There is no evidence that any of the colors in use, or even those which have been recently delisted, will produce cancer.

As Secretary Flemming stated in his testimony on January 26, 1960, with respect to the colors used in lipsticks, which are now involved in delisting proceedings (Tr. 119, 121):

"None of the colors have produced cancer in the test animals, however."

* * * * * * *

"Again, may I underline the fact that there is no question of cancer involved in any of these colors. I mean, none of them have been shown to induce cancer in animals when ingested by an animal, so that issue is not present."

The Food and Drug Administration has been retesting almost all of the food colors and many of the other drug and cosmetic colors, some for as much as 7 years, and they have advised industry that none of their tests to date have disclosed carcinogenic manifestations.

The statement of Dr. Aaron (Tr. 585) that a number of the food colors are listed "in a compilation of carcinogenic substances" reported by "Dr. Shubic and Dr. Howell * * * published by the Public Health Service," is erroneous and misleading. The publication so referred to is Public Health Service Publication No. 149, second edition, 1951, by Jonathan L. Hartwell of the National Cancer Institute, and supplement No. 1 thereto, 1957, by Philippe Shubik of the Chicago Medical School and Jonathan L. Hartwell. This publication is not a compilation of carcinogenic substances. Instead, as stated in the introduction to supplement No. 1, it is simply a survey of the literature on the testing of compounds for carcinogenic activity and "it is not the purpose of this survey to pronounce upon carcinogenicity of tested material."

The fact remains, that, as Dr. Carney testified on February 11, 1960, when he appeared for the Pharmaceutical Manufacturers Association (Tr. 475):

"The coal-tar colors do not produce cancer."

2. ACCEPTABLE PROPOSED AMENDMENTS

We have noted that on February 10 and 11, various amendments were proposed by one or more of the following organizations:

National Canners Association.
Abbott Laboratories.
The Society of the Plastics Industry.
The Manufacturing Chemists Association.
The Pharmaceutical Manufacturers Association.
The Proprietary Association.

which would generally:

(*a*) Narrow the definition of "color additive" to exclude materials which need not be regulated as color additives for various reasons;

(*b*) Remove economic factors and functional value concepts from, and limit the Secretary to safety considerations in, the determination of whether to list color additives for use; and

(*c*) Write the usual procedural safeguards for hearings and judicial review into the provisional listing and transitional provisions of the bills.

Our committee has no objection to those amendments. Indeed, we think they will generally strengthen the proposed legislation—by eliminating extraneous matter and avoiding needless duplication, thus making it easier to administer, and by adding traditional due process rights—without impinging in any way on the central purpose of safety for use and the protection of the public health. Accordingly, we hope those amendments receive favorable consideration from your committee.

3. THE CANCER OR DELANEY CLAUSE (SEC. 706(b)(5)(B) OF H.R. 7624)

We note that several responsible organizations: Abbott Laboratories, the Manufacturing Chemists Association, the Pharmaceutical Manufacturers As-

sociation, National Feed Ingredients Association, and the Proprietary Association, took the same general position as we did concerning this clause—that it is unnecessary, that it is scientifically unsound, and that at the very least its rigidity should be relaxed to allow a certain area of flexibility and judgment on the part of the Secretary, with the burden firmly remaining on industry to produce data which demonstrates that the proposed use of a color additive will be safe under the conditions of that use. Those presentations of those organizations effectively demonstrate how the per se ban of the Delaney clause in the food additives amendment as it is now construed by the Department of Health, Education, and Welfare can lay a stifling hand on scientific research and the economic growth which depends upon that research, particularly in the field of agriculture. We are encouraged by the interest which you, Mr. Chairman, and other members of the committee have expressed concerning this problem and its possible resolution. While we would prefer to see the cancer clause wholly eliminated, or made wholly discretionary, as proposed in Mr. Schramm's testimony of January 27, 1960, we can understand why it may not be possible to go that far. Accordingly, we suggest that as a minimum your committee should adopt the proposal advanced by the Pharmaceutical Manufacturers Association, which appears at page 541 of the transcript for February 11. That proposal makes the least possible change in the language of the Delaney clause, while at the same time allowing for some exercise of judgment on the part of the Secretary. It still leaves the Secretary with ample power to protect the public health, and we believe that it is an eminently modest suggestion which should cause no concern to the public.

Finally, we would like to stress again the urgent need for this legislation. We are even now engaged in litigation and delisting proceedings with the Food and Drug Administration because of the outmoded "per se harmless" concept of the present legislation for regulation of colors. Prompt enactment of the proposed legislation will eliminate this burden from both industry and government and will permit the continued use of needed colors in foods, drugs, and cosmetics under conditions which are safe.

Thank you very much for your interest and consideration.

Very truly yours,

JOHN H. PICKERING,
Attorney for the Certified Color Industry Committee.

APPENDIX

Representative King, transcript 412

"And so, they argue, since the odds already seem to favor the probability that colors and other additives which in enormous quantities have carcinogenic effects upon test animals are harmless in the amounts in which they are normally consumed, so why ban them—why not authorize their continued use until science can conclusively show that they are harmful."

Representative King, transcript 413

"The colors which go into our foods and cosmetics are in no way essential to the public interest or the national security. If those which are carcinogenic in any degree are kept out of the market, the consumers will easily get along without them."

Transcript 566

"Mr. WILLIAMS. They tell me, Mr. Chairman, that there are a great many more chemical substances than you would think even from what you have heard, which will, when ingested or injected in animals cause cancer under certain conditions and in certain strains of animals, and we do not know how many of these coal-tar colors may do that."

Dr. Aaron, transcript 585

"* * * that colors used in foods, drugs, and cosmetics have carcinogenic properties is more difficult to establish, since tests have to be carried on during many years in several species of laboratory animals. But a number of such food colors are listed in the report by Dr. Shubic and Dr. Howell, I believe, of the U.S. Public Health Service in a compilation of carcinogenic substances published by the Public Health Service."

Transcript 595

"Mr. DINGELL. Would you say our knowledge is sufficient to determine whether or not these substances, when ingested, will cause cancer over a long period?

"Dr. AARON. For some of the colors there is sufficient knowledge. For others, more work is required to be done."

NEW YORK, N.Y., *May 13, 1960.*

Color additives legislation—S. 2197 and H.R. 7624

Hon. OREN HARRIS,
Chairman, House Committee on Interstate and Foreign Commerce, New House Office Building, Washington, D.C.

DEAR MR. CHAIRMAN: The certified color industry deeply appreciates your statement, made at the close of the hearings on Monday of this week, May 9, that you intend to begin executive sessions next week to consider the proposed color additives legislation. As we have stressed to your committee, this legislation, which was proposed by the Department of Health, Education, and Welfare, after consultation with industry, is urgently needed in the public interest to insure an adequate supply of colors for use in foods, drugs, and cosmetics under conditions which will be safe. Since the legislation passed the Senate in the last session, it is our fond hope that action can be completed before the present Congress adjourns. We respectfully urge that you do all that is in your power to accomplish that, so that the matter will not have to be started again in the new Congress to follow, with consequent loss of the considerable amount of time which has been devoted to the matter by you and your committee, by the Senate, by the Department of Health, Education, and Welfare, and by industry.

As we see it, the only substantial problem remaining to be resolved is the treatment of the so-called Delaney clause. While this is a serious matter, we believe it has assumed proportions which are out of all relationship to the use of colors in foods, drugs, and cosmetics. From the practical standpoint, the inclusion or deletion of the clause should have no present effect because, so far as we know, none of the colors now in use are suspected carcinogens. Also, the discussion of the clause in the present hearings has tended to center on issues unrelated to the use of colors—issues which instead properly come under the food additives and pesticide chemicals amendments to the Federal Food, Drug, and Cosmetic Act and involve the use of noncolor chemicals in animal feeds, and the problems arising from the recent cranberry and poultry episodes, none of which involve the use of color additives. Nevertheless, because of those problems, and because of inability to forecast the future, we have felt impelled to point out what we regard as the undesirable rigidity of the Delaney clause and to suggest its deletion or modification, despite the fact that it does not raise any practical problem for the color industry at the present time. We accordingly hope that your committee will see fit, for the reasons advanced by us and by witnesses for other interested industries, to delete or modify the Delaney clause. However, if that should not be possible, we would be prepared to accept the Delaney clause for the present if that is the only way in which the pending color legislation can be enacted in this session. The thing which we desire to avoid if at all possible is to have such legislation founder on an issue which is not a present problem in the use of colors, or to have this legislation held up for resolution of problems which relate to the use of other forms of additives under other provisions of the Federal food, drug, and cosmetic law.

It is requested that this letter be made part of the record of the hearings.

Respectfully submitted.

ARTHUR T. SCHRAMM,
Chairman, Certified Color Industry Committee.

NATIONAL CANNERS ASSOCIATION,
Washington, D.C., May 11, 1960.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Under the date of April 21, 1960, Secretary Flemming of the Department of Health, Education, and Welfare submitted to you, as

chairman of the House Committee on Interstate and Foreign Commerce, his views on the various amendments proposed by industry witnesses to the proposed color additive bills (H.R. 7624 and S. 2197).

Although his letter and detailed comments make no explicit reference to the statement submitted on behalf of the National Canners Association, many of the Secretary's comments and objections to proposed amendments are directed to the substance of certain of the proposals offered by this association and others in the food industry.

In view of these comments and objections, we deem it desirable and necessary to reply to some of the points made by the Secretary in his "enclosure I" and would greatly appreciate your including this letter as a part of the record of your committee's hearings.

We submit these comments on behalf of an important branch of the food industry that has for more than a half century sponsored and supported effective food and drug legislation.

Its position with respect to H.R. 7624 and S. 2197 is predicated upon its crystallized views that effective legislation must be specific and directed at the particular problem, in this instance coal-tar coloring; that prior licensing controls have been determined by Congress to be necessary only in the area of public health and safety, and should not be incorporated into the entire regulatory structure, and particularly not on such questions as the functional utility of an ingredient or administrative a priori apprehensions about misbranding. The latter two areas are fully covered already by the Federal Food, Drug and Cosmetic Act and left by Congress to judicial determination.

These reasons underlie our basic approach to this proposed legislation—namely, that it be specifically limited to coal-tar colors and other identified toxic colors about which problems exist, and that no comprehensive licensing system be created for all food ingredients that might impart color, including, as does this bill, food ingredients whose safety is already covered by the food additives amendment, and from which licensing system exemptions might be carved out only in the Secretary's discretion and only after burdensome administrative procedure.

I. SCOPE OF THE BILL

Although Secretary Flemming undertakes to criticize and reject all industry proposals to limit the scope of the proposed bill, at no point does he attempt to meet the fundamental food industry objection that the broad definiion of color additive in the bill would extend the scope of the comprehensive licensing system far beyond its announced objectives.

As the bill now stands, it applies to a "dye, pigment, or *other substance* made by a process of synthesis or similar artifice, or extracted, isolated, or *otherwise derived, with or without intermediate or final change of identity, from a vegetable, animal,* mineral *or other source,* and *when added* or applied *to a food,* drug, or cosmetic, or to the human body or any part thereof, is *capable* (alone or through reaction with other substances) *of imparting color thereto* * * *." The italic words make it clear that any substance derived from an animal or vegetable source without a change of identity, when added to a food and capable of imparting color to it is covered by the bill. It is difficult to imagine any food ingredient of a combination product that would not come within this extremely broad definition.

For example, peas added to carrots, tomatoes added to catsup, raspberries added to apple sauce, pineapple juice added to grapefruit juice, pepper added to any food, eggs added to bread, and cheese added to sauce, would be included within this broad definition, for in each case the food is clearly capable of imparting some of its own color to the mixture, and has itself been added to the food ingredients in the product. The Secretary does not acknowledge that his proposed definition of color additive is so broad that it would include virtually every food now made.

This is not, we submit, what Congress or any members of the food industry has in mind with regard to the color bill. Throughout his statement Secretary Flemming continually refers to dye materials or colors as if the bill concerned only substances added to foods solely to impart color thereto. If this is in fact the case, there should be no opposition whatsoever to limiting the definition of color additive.

The Secretary refers in his statement to the provision in the bill that would enable him "by regulation" to determine that a substance is not used solely for coloring purposes. This provisions is offered in mitigation of the broad

definition of color additive. As pointed out above, the definition of color additive includes virtually all foods. In order to exempt these foods for each use from the licensing and pretesting requirements of the bill, the rulemaking procedures would have to be initiated and completed before the exemption could apply.

We can see no reason whatsoever for such procedures, nor does the Secretary put forth any convincing justification for them. Instead, he suggests that the proposed limitations would involve the FDA in difficult determinations of the purpose for which a substance is used, would lead to uncertainty and confusion among users of color, would be a backward step with regard to coal-tar colors, and would create scientifically unsound distinctions among coloring substances.

We submit that each of the objections offered by the Secretary to limitations on the scope of the bill derives principally from the definition of color additive proposed by him, rather than from the proposed industry amendments. A determination of purpose for use would be required under the present bill in every proceeding designed to exempt foods and food ingredients from licensing as color additives. The Secretary would be obliged to find that a food ingredient capable of imparting color to a food (and again we must emphasize that this all-inclusive definition would include virtually all foods) was used solely for purposes other than coloring.

Any potential uncertainty and confusion created among users of color must be initially traced to the Secretary's broad definition of color additive. Under present law there is no marked degree of uncertainty—food colors other than coal-tar colors are covered by the food additives amendment, and coal-tar colors are covered by their own special listing provisions. The proposed bills would introduce the uncertainty, by changing the status of non-coal-tar colors and by requiring an exemption by regulation for hundreds of food substances. Furthermore, we are aware of no industry demand for an all-inclusive list of substances capable of imparting color and recognized by the Secretary as safe and suitable for various uses, although the Secretary repeatedly refers to the desire for such a list on the part of users of food color.

The Secretary several times maintains that the industry proposals would involve a backward step for coal-tar color regulations. If that is so, then the National Canners Association agrees that such a backward step is not desirable. But the answer is not to enack broad, all-encompassing legislation, taking within its sweep virtually all food ingredients, but rather to define carefully the substances covered, and provide the desired regulation for just those substances.

If problems exist with regard to coal-tar colors, then those problems should be remedied by legislation dealing with coal-tar colors. The Secretary maintains that distinctions between coal-tar colors and other colors are not "scientifically sound from the point of view of determining the safety of a color." First, we would like to point out that this distinction has been made ever since the FDA inaugurated coal-tar color licensing under the 1906 act. Second, the Secretary puts forth no scientifically sound reasons for distinguishing between substances (other than coal-tar colors) that have some coloring function in food and other substances. The fact that an ingredient in food has some coloring qualities should not in itself make that substance more suspect than the other ingredients in food whose safety is already controlled by the food additives amendment.

Only once in his statement does the Secretary attempt to present any tenable basis for subjecting non-coal-tar colors to the cumbersome procedures of the proposed bills. He says that "certification *may be* desirable for public health protection in the case of *some* non-coal-tar colors where a tolerance limitation is necessary." [Emphasis supplied.] If this is in fact the case, then evidence should be presented to justify the inclusion of those particular additional coloring ingredients within the coverage of the bill.

The Secretary's statement repeatedly refers to the fact that the proposed bill was worked out with the cooperation of the certified color industry and was completely acceptable to that industry. On page 10 of his statement, he says that "the Certified Color Industry Committee * * * has perhaps the largest, and certainly the most immediate and pressing, interest in this measure on the industry side."

The food industry as a whole, including the National Canners Association, acknowledges the "pressing interest" of the certified color industry—but we do not understand how this fact gives to that industry the authority to negotiate with the FDA a bill that would take within its scope hundreds of non-coal-tar

colors and other food ingredients. A bill that deals solely with the products of the coal-tar color industry without affecting wholly unrelated products would seem to be the only proper subject of that industry's negotiation and agreement with the FDA.

We suggest, therefore, in view of the coal-tar color industry's "pressing interest," the negotiated agreement between the FDA and that industry, and the complete lack of justification for a broader bill, that the proposed bill be limited to coal-tar colors and those other toxic coloring substances identified by the Secretary as properly subject to batch certification.

An approach of this sort would automatically obviate a great many of the industry objections to the scope of the bill. There would be no reason to insert a "general recognition of safety" clause. Specific provisions dealing with agricultural chemicals, food additives, artificial or natural colors, packaging materials, and other incidental additives would become unnecessary. Difficult questions of purpose and interpretation would not be presented, and no uncertainty would exist among producers and users of food ingredients that may lend some coloring effect to foods in which they are used.

Although the Secretary peremptorily rejects this approach on pages 2 and 3 of his statement, there is no legitimate reason for his insistence on arbitrary and novel powers over food ingredients on the basis of their coloring effects rather than their chemical qualities—the safety of the latter being already safeguarded by the Food Additives Amendment of 1958.

In addition, this approach would answer most of the industry objections—objections made in the best of faith in the interest of all concerned, but not answered in the Secretary's statement.

We should perhaps point out once more that a color bill limited to coal tar colors and other identified toxic colors would leave all other food ingredients, whether used for coloring or not, to be regulated by the food additives amendment. If special problems exist with regard to ingredients in drugs and cosmetics, then they should be separately dealt with, without creating a host of problems for food products.

II. SUBSTANTIVE PROVISIONS AS TO LISTING OF COLORS

In the section of his statement dealing with substantive provisions as to listing of colors, Secretary Flemming has outlined his objections to the food industry proposals that would have restricted the Secretary's determinations in the licensing procedure to questions of safety. In rejecting the proposal made by the food industry witnesses that the reference to "intended physical effect" be eliminated from the bill, the Secretary concludes, "Clearly, so long as it is impossible to establish absolute assurance of safety, it is imperative to restrict the *purposeless* addition of *toxic* substances to the food supply * * *." [Emphasis added.]

The apparent assumption behind this reasoning is that food manufacturers will for some unknown and unstated reason use large amounts of color, when smaller amounts would achieve the intended physical effect. Color ingredients, like other food ingredients, are an element of cost for the manufacturer, and it is difficult to conceive of any circumstances under which manufacturers would deem it desirable to resort to the "purposeless addition of toxic substances" to their products.

We feel that there is absolutely no practical need for an FDA determination as to intended physical effect. There is no evidence to support the Secretary's clear premise that food manufacturers would use more of a substance than is needed to achieve the intended effect. If there is a question of safety with regard to a proposed use of a color additive, then that question can be settled by the establishment of a satisfactory tolerance. Beyond that, the FDA need not go to assure consumer safety. The inclusion of further tests, dealing with intended effects, necessarily grants to an administrative agency authority to make its own determination on a question that has nothing to do with safety, and that properly should be left to manufacturers and consumers to decide.

The Secretary also seeks to defend the need for a test of suitability in the bill. Here again, his cited examples of when the FDA might deem a particular use not suitable assume irrational action on the part of manufacturers. A food manufacturer would have no desire to use an unstable color, or a color that would not stay in solution in liquid products, or a diluent that would cause

adverse changes in his product. The reference to the possibility of toxic diluents being used in foods complelety disregards the existing safeguards of the food additives amendment.

Finally, the Secretary maintains that he should have the authority to refuse to license the use of a color when he deems that the proposed use would promote deception in violation of the act. In each of the examples he cites of coloring practices that would be disallowed, no violation of law could be determined without reference to actual samples of the product in question. Whether egg noodles are deficient in eggs; apples, tomatoes, or oranges are immature; or meat is stale, are all questions of fact that could not conceivably be decided at the time of the listing of a color for use. Only when the color is actually used on the defective foods would deception exist, and not until that time. An administrative determination that a certain color cannot be used in egg noodles to hide a deficiency in eggs would add nothing to the present provisions of the act.

If under some circumstances the proposed use of a color in a food would in itself be in violation of the act without reference to the state or condition of the particular item of food in which it is actually used (and no such circumstances are cited by the Secretary or occur to us), the Secretary in licensing the color as to safety could notify the applicant that the proposed use would be considered by the FDA to promote deception in violation of the act. The potential user could then make his own decision as to the legality of the use, and if he disagreed with the FDA, the question would ultimately be authoritatively determined in the first instance by a court of law.

It should be noted that the consumer is afforded no additional protection against the deceptive use of color by the bill as it now stands. If the Secretary were to deny the licensing of a color on the ground that it would promote deception, he would nevertheless retain no control over the activities of the applicant. No violation of the act could occur until a food manufacturer actually used the prohibited color in a food and shipped it in interstate commerce. The detection by the FDA of the violation would present the same problem under the law as it now stands, under the proposed bill, or under the bill amended to exclude reference to an administrative determination as to deception.

The difference in the two approaches would not occur until the use of the color had actually been detected. Under the bill as it now stands, the FDA would only have to show that the color had been used without proper listing, and an automatic violation would exist. There could be no review by the court as to whether the actual use in fact promoted deception of the consumer. That determination would already have been made by the FDA when it refused to license the use. If an interested party had not sought judicial review of that decision at the time of FDA refusal, no further judicial review would be available.

Without the reference to deceptive uses in the bill, the FDA would have the same problem of detection, but it would then have to convince the court or jury that the use of the color would promote deception of the consumer.

The only practical difference in the two approaches, then, relates to the scope of judicial review available to those who use the color. Under the Secretary's proposal, the question of possible deception would be reviewable only at the time of the FDA refusal to license. The decision would be made without reference to the actual use of the color by a manufacturer, and the court would be bound by findings of the Secretary supported by substantial evidence.

Under our proposal, the question of deception would be initially determined in a court of law, as it should be. Judges have long been accustomed to making just such determinations as this, and they are at least as competent as the FDA to decide whether a particular and actual use of a color in a food would promote deception in violation of the act.

The color additive bill has been put forward as a safety bill. Prior licensing of food ingredients is thought to be necessary with regard to safety because of the complicated scientific questions that must be taken into consideration. The FDA has recourse to expert opinion on the question of safety, and is ostensibly better able than judges to make initial decisions of fact in this area. The National Canners Association strongly urges that the FDA be authorized to make these administrative decisions only with regard to safety, and that questions of deception be retained for the courts, where they have been answered since the enactment of the first law in 1906.

III. CHANGES IN TRANSITIONAL PART

Despite some apparent misgivings, the Secretary has agreed to the inclusion of some procedural safeguards in title II of the proposed bill, in response to food industry requests. We recognize that as a practical matter hearings and judicial review involving the temporary determinations made under transitional listing provisions will seldom be required, particularly if the scope of the bill is limited as we propose. Producers and users of coloring substances would in almost every instance be willing to accept the informed determinations of the FDA with regard to the safety of a particular substance.

Nevertheless, as we indicated in our original statement to the committee, it would not appear to be sound legislative policy to grant plenary and unreviewable authority to any Government agency, no matter how responsible it may be in protecting the interests of all concerned. The Secretary proposes a compromise on this point that would afford some safeguards to parties adversely affected by an order under the provisional listing procedures. The Secretary's proposal would not afford the full protection that is available under the permanent listing procedures, and in that respect does not completely answer the food industry objections.

Respectfully submitted.

CARLOS CAMPBELL, *Executive Secretary.*

TAMPA, FLA., *April 20, 1960.*

Re H.R. 7624—S. 2197.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

MY DEAR MR. CHAIRMAN: My two previous statements, accompanied by my affidavit, were filed for the record on February 11, 1960, in opposition to these bills as introduced.

In those statements, I commented on the fact that, although every food color heretofore listed as certifiable has been tested at least twice by precisely the same procedures as are proposed to be used for testing food additives (see testimony of Dr. Robert Blackwell Smith, Jr., transcript of food additives hearings, 85th Cong., July and August, 1957, April 1958, pp. 86–109, at pp. 87–109) and have an incontestable record for safety as used over a period of 50 years, it is now proposed to force retesting of each such color, as provided for in section 203 of H.R. 7624.

Further investigation has developed a possible key to Food and Drug Administration's insistence on such retesting, from which it would appear that Food and Drug Administration may contend that additional testing must be done for the purpose of establishing cancer inducing properties, if any. Unless there are newer procedures than those used in testing Citrus Red No. 2 a few years ago, then all colors have likewise been so tested for carcinogenic properties, with negative results, as will hereinafter be shown.

I am now enclosing a copy of a Thermofax reprint of pages 188–191 from volume 2 of Book 13, 1957, Records of Union Internationale Contre Le Cancer (International Union Against Cancer) reciting certain resolutions adopted by that conference, for verification of the following matter quoted therefrom under the heading: "V. Special Problems," at page 189.

"After discussing the available evidence on the basis of animal experimentation, the conference decides to establish three lists of food dyes.

"A. FOOD DYES

"*Group I.*—Dyes that have been adequately studied and which satisfy the agreed criteria of safety (see p. 188).

"(Nil)."

* * * * * * *

"*Group II.*—Dyes presently under experimental investigation and which might be included in Group I after the completion of the investigation on the basis of established criteria.

"Depending on the available evidence three subgroups were established:

"(a) Dyes which after experimental investigation have shown neither toxic nor carcinogenic activity and which therefore might be included in Group I if the adequate criteria are fulfilled completely."

Under this subhead there is listed one color only—the water soluble Tartrazine—F.D. & C. Yellow No. 5.

"(b) Dyes which have not shown experimental evidence of toxic or carcinogenic activity, but for which the tests are considered to be insufficient."

Under this heading are listed six F.D. & C. colors, being F.D. & C. Red No. 2, Yellow No. 6, Blue No. 2, Reds Nos. 1, 3, and 4 and one D. & C. color—D. & C. Yellow No. 10; and one External D. & C. color—Red No. 10, all being water soluble colors.

"*Group III.*—Dyes considered unsuitable or potentially dangerous which should not be added to food or drink for man or animals."

Under this heading are listed eleven F.D. & C. colors (all F.D. & C. colors not under Group II a) and b) listings) being F.D. & C. Red No. 32; Orange No. 1; Orange No. 2; Yellows Nos. 1, 3 and 4; Green Nos. 1, 2 and 3; Blue No. 1; Violet No. 1.

Of the above colors, Red No. 32; Orange Nos. 1 and 2, and Yellows Nos. 1, 3, and 4 (and Yellow No. 2, a potassium salt of Yellow No. 1) have been delisted by F. & D.A. because, while four times admitted by F. & D.A. to be "safe under conditions of intended use," these colors showed toxic effects when fed in massive doses of up to 5,000 times the amounts of intended usage.

At page 188 of this Thermofax copy will be found the origin of the Delaney amendment to the 1958 Food Additive Amendment, in numbered paragraph 2, reading:

"(2) Any substance which causes cancer in man, or which, when tested under these conditions, is shown conclusively to be a carcinogen at any dosage level, for any species of animal, following administration by any route, should not be considered innocuous for human consumption."

We cannot understand how a Conference at which Dr. Arnold Lehman, Head of F. & D.A.'s Division of Pharmacology, and Dr. A. A. Nelson, Head of another F. & D.A. Division, were the official delegates of F. & D.A., could have listed every certified food color as being suspect for cancer inducing properties.

In the first place, each of the certified food colors had been rigorously tested for cancer inducing properties, by F. & D.A. itself, as is clearly shown by an article written by Dr. Herbert O. Calvery, Ph. D., then chief of F. & D.A.'s Division of Pharmacology (Coal-Tar Colors: Their Use in Foods, Drugs and Cosmetics, American Journal of Pharmacy, vol. 114, pp. 324–337, 1942) a copy of which is hereto attached. (Thirty copies are being mailed to the clerk of the committee, for the use of members of the committee.)

We respectfully request attention to Dr. Calvery's recital at pages 331–333, of the discovery that Sudan I and Butter Yellow, previously listed for certification, were carcinogenic and the immediate delisting thereof.

Attention is further requested to Dr. Calvery's recital (pp. 333–335) of the manner in which all colors subsequently relisted under authority of the 1938 F.D. & C. Act, were tested.

While Dr. Calvery does not state that any special class of tests were directed specifically at a determination of carcinogenicity, it is very clear, from the first complete paragraph at page 335, that such a determination was deemed of first importance in setting up those tests.

Other and specific tests, by oral administration, for cancer inducing properties, were run by Canadian Food and Drug Laboratories of the Canadian Department of National Health and Welfare, Ottawa, Canada, in the case of F.D. & C. Green No. 2, Orange No. 2, and Red No. 32. A copy of the report thereon by Almark, Grice and Mannell, of the Canadian Government Laboratories, appears at pages 15–22 of the enclosed Appendix.

Although the opening statement of that report emphasizes that these tests were undertaken to determine any carcinogenic effects from oral administration of these colors, and while Orange No. 2 and Red No. 32 were fed in concentrations of up to 15,000 parts per million parts of the diet, and Green No. 2 in concentrations of up to 30,000 ppm, no carcinogenic effects were noted.

(The higher level of feeding Green No. 2 was doubtless due to the fact that a British scientist reported, in 1947, that repeated injections, in rats, of Green No. 2, had resulted in tumors. It was subsequently learned that such repeated subcutaneous injections (weekly for 52 weeks at the same identical spot on the animal's skin) would produce tumors, when glucose and other known harmless materials are thus injected.)

(It should be emphasized that, while some are inclined to discount reports of "negative results," no other type of test and no other nomenclature can properly

be used. You are testing to determine whether carcinogenic effects can be had by administration of a certain substance by a certain method. If there is no carcinogenic effect, you have, of course, a "negative" result, which to a scientist is an affirmative finding.)

As to Red No. 32, this color was tested for more than two years on several species of animals, concluding with tests made on human volunteers. These data were submitted to F. & D.A. in support of application for certification which had been pending (with F. & D.A. tests running thereon) since before the 1938 act was enacted. It is the color referred to by the first "proviso" amendment to sec. 402(c) in the act as enacted.

These F. & D.A. tests of Red No. 32 included the tests for cancer inducing properties, and ran from 1938 into 1944—5 to 6 years—on mice, rats, and dogs.

Again, the proposed order, dated December 22, 1954, in the Departmental delisting proceedings directed at F.D. & C. Orange No. 1, Orange No. 2 and Red No. 32, carried the following:

As to Orange No. 1: Finding of Fact 2, par. (a)i, showed completed tests by oral administration, in "chronic feeding tests" with rats at 1,000, 5,000 and 20,000 parts per million.

As to Orange 2: Finding of Fact 2, par. (b)i, lists completed chronic feeding tests, with rats at 100, 500, 1,000, 2,000 and 2,500 ppm; par. (b)iii, completed carcinogenicity tests with mice, using subcutaneous implantation of 12.1 milligrams at intervals for 30 to 55 weeks; par. (b)iv, completed chronic feeding tests by doses of 5, 20 and 100 milligrams per kilogram of body weight per day; par. (b)v, completed chronic feeding tests with dogs at 400 and 2,000 ppm.

As to F.D. & C. Red No. 32: Finding of Fact 2, par. (c) shows completed tests: (i) chronic feeding tests with rats at 1,000 ppm.; (ii) subacute feeding tests in rats with diets containing 2,500, 5,000, 10,000 and 20,000 ppm.; (iii) chronic feeding tests with rats at 1,000 and 2,000 ppm.; (iv) carcinogenicity tests in rats using weekly subcutaneous injections of 0.1 cubic centimeters to 0.2 ccs. of a 5 percent solution; (v) carcinogenicity tests in mice using subcutaneous implantation of 10.8 milligrams at intervals for 35 to 47 weeks; (vi) chronic feeding tests with dogs at doses of 5, 20 and 100 milligrams per kilogram of body weight per day; (vii) chronic feeding tests with dogs at 400 and 2,000 ppm.

The same tests are again reported in Finding of Fact 2 of the final order, dated November 10, 1955, whereby F.D. & C. Orange No. 1, Orange No. 2 and Red No. 32, were delisted.

As to all of the foregoing tests of F.D. & C. Orange No. 2 and F.D. & C. Red No. 32, for carcinogenicity, the results were "negative," in all cases.

These two colors (Orange No. 2 and Red No. 32) therefore, had been tested for carcinogenicity four times, as follows:

(1) By independent laboratories, to support application for listing for certification.

(2) By F. & D.A. before listing for certification in 1939 (the tests on Red No. 32 ran for 5 to 6 years).

(3) By F. & D.A. again, in 1952–53.

(4) By Canadian authorities in 1955 (reported in January 1956; published in June 1956).

The tests were made by three methods; i.e., by feeding, by implantation and by injections. The tests in each case ran for a time long enough and the color was administered in amounts large enough, to produce positive results if these colors had carcinogenic properties. The results as to every test were negative.

Again we ask: When does this testing stop? If four series of tests produce negative results, what value could attach to a fifth test? When manufacturers or users have paid through the nose for such tests already, why should they pay again for further testing now, after 22 years of use without a breath of suspicion as to carcinogenicity attaching?

Yet, in August of 1956, this Conference of the International Union Against Cancer, in Rome, classified those two colors, and nine other certified food colors, under "Group III.—Dyes considered unsuitable or potentially dangerous which should not be added to food or drink for man or animals."

Even if the Conference was unsatisfied as to the noncarcinogenicity of those colors upon what possible theory were Orange No. 2 and Red No. 32 excluded from listing under "Group II.—Dyes which have not shown experimental evidence of toxic or carcinogenic activity, but for which the tests are considered to be insufficient"?

What were our F. & D.A. delegates doing at this Conference? Did they present the whole record of the four tests of these colors to the Conference? If they

did not submit that whole record, and demand proper listing of these F.D. & C. colors, why didn't they? And if they did submit that record, and the Conference still refused to properly list these colors, why did not the U.S. Delegates dissociate themselves from such an obviously discriminatory listing.

The immediate effect of this Conference ruling has been to reduce Florida's shipments of oranges to Great Britain and the Continent from 1,426,843 boxes in 1956–57, to 129,230 boxes in 1958–59.

We have spent approximately $200,000 in costs of formulation, protesting, and listing of a new color, Citrus Red No. 2, for use in coloring oranges. This is the color as to which F. & D.A. Commissioner Larrick testified, on January 26, last, that F. & D.A. are entirely satisfied with the testing data and no further tests will be required. This color is certifiable for coloring oranges, only, pursuant to authorization of the Congress (Public Law 86–2) and the formal finding of the Congress (H. Rept. No. 1982, Mar. 29, 1956; S. Rept. No. 2391, June 29, 1956, or H.R. 7732, 84th Cong., 2d sess.) that the artificial coloring of oranges is an "economic necessity" to the citrus industry of Florida and Texas.

This color, despite the voluminous data submitted to Great Britain and the authorities of the free countries of Western Europe, by the Florida industry, has not yet been approved by even one of those countries.

And our Federal Food and Drug Administration, which could be of incalculable help in procuring approval of that color by the appropriate authorities of those countries, has not lifted a hand nor said one word to anyone in Britain or Europe, to assist us in securing that approval—or, if they have, it is the world's best kept secret.

We can imagine no good reason why F. & D.A. should not vigorously espouse the cause of the color-using industries of the United States as to the nontoxicity and noncarcinogenicity of our certified food colors, since Commissioner Larrick, in a paper read for him by Deputy Commissioner Harvey, at a meeting of the American Food Law Institute, held in London, England, in 1957, had this to say ("Chemical Week," issue of Aug. 3, 1957, p. 22):

"Cancer can be produced in test animals by repeated injections of sugar solution, or peanut oil, or cottonseed oil, or lard or tannic acid into muscle tissues. Should they be taken out of our food supply?" * * *

"We think it unwise to become so possessed of a cancer phobia that we lose perspective.

"*We don't know of any evidence that any coal-tar color now permitted in food, or any of the three colors recently removed from the list, is capable of causing cancer when added to man's food.*" [Emphasis supplied.]

If F. & D.A. had no such evidence in 1957, then, of course, no such evidence existed in August 1956, when the above-discussed discriminatory listing of our certified food colors was ordered at this Rome Conference, concurred in by F. & D.A.

Similarly, in the very press release which announced the delisting of F. & D.A. Orange No. 1, Orange No. 2, and Red No. 32, we find this statement by Commissioner Larrick (official news release HEW C–81, Nov. 16, 1955):

"*FDA Commissioner George P. Larrick said the three colors involved are harmless in the amounts ordinarily consumed in foods, but recent scientific investigation shows they are not harmless when fed in large amounts.*" [Emphasis supplied.]

Also, the Report of the Hoover Commission Task Force on Federal Medical Services, sent to the Congress by Mr. Hoover in February of 1955, and signed by 17 nationally known and distinguished physicians and surgeons, who had been exposed for many years to the ceaseless flow of propaganda re the supposedly poisonous properties of our certified coal tar food colors, showed in this report their opinion of such propaganda by recommending that the testing and certification of each individual batch of the certified F.D. & C. colors (not the pretesting before listing) be discontinued, because such testing had long since ceased to produce significant returns, in view of the safety record established. (See pp. 78–80 of the report.)

We respectfully submit that the foregoing highlights the absolute necessity for the Congress, in enacting color additive legislation, to fix unmistakable guidelines to be observed by F. & D.A. in its administration of such laws, so that every necessary action to protect the public health will be taken—that and no more—and that no action shall be taken, inimical to color-using industries, on unverified imaginations and suspicions.

We further respectfully submit that, on the record, the prior record of pretesting, both for toxicity and carcinogenicity, leaves no grounds whatever for the enactment of section 203 of H.R. 7624, whereunder, as to all formerly and presently listed color additives, F. & D.A. can take any action they may see fit, however arbitrary and unnecessary, without affording affected users any prior hearing or any review of such orders by any court.

Respectfully submitted.

FRANK R. SCHELL.

(NOTE.—The Thermo-Fax reprint referred to in the above letter has been placed in the committee files.)

ABBOTT LABORATORIES,
North Chicago, Ill., May 12, 1960.

Re color additive legislation, H.R. 7624 and S. 2197.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR CHAIRMAN HARRIS: When I appeared before the Committee on Interstate and Foreign Commerce on February 10, 1960, and testified on the pending bills pertaining to color additives, Secretary Flemming was requested by the committee to prepare a statement outlining the application of the cancer clause in the Food Additives Amendment of 1958 to organic arsenical compounds for use as ingredients in animal feeds (transcript, pp. 359–360). At the time I requested and received permission to make a reply for the record, if necessary, to the Secretary's statement.

The purpose of this additional statement is to comment upon the letter from Secretary Flemming to the committee dated April 18, 1960, which letter was placed in the record at the hearing on May 9, 1960.

In his letter, the Secretary forthrightly admits that, in confirmation of the facts contained in my testimony, "the organic arsenic compounds used in animal feeds have not been shown to produce cancer when fed to test animals." The Secretary testified further that the cancer clause becomes applicable to a substance "only when the results of the tests * * * show that the substance has induced cancer in one or more of these animals" (transcript, May 9, p. 939). Accordingly, it seems clear that new uses of organic arsenicals cannot be prohibited under the authority of the cancer clause.

Speaking on behalf of the Secretary, moreover, Commissioner Larrick indicated that the Department does not construe the cancer clause as requiring industry to prove that an additive will not induce cancer (transcript, May 9, pp. 934–937). We must assume, therefore, that the Food and Drug Administration will no longer adhere to the untenable position that users of organic arsenical products must demonstrate that such products "do not have this carcinogenic potential" (transcript, February 10, p. 337).

Despite this the Secretary indicated that it was his purpose to conduct an investigation to determine whether certain uses of organic arsenicals, other than those uses which have been approved under the new drug procedure, are generaly recognized by qualified experts as safe. The Secretary implied that an affirmative answer would exempt these uses, also, from the food additives amendment. In view of the unchallenged facts set forth in my testimony and the Secretary's confirmation of these facts in his testimony of May 9, such a survey appears completely unnecessary.

One erroneous impression inadvertently created by the statement read by the Secretary on May 9 should be corrected for the record. The Secretary suggested that I propose that tolerances should be set for potassium arsenite, an inorganic arsenic-containing compound. A review of my statement will reveal that the only reference to potassium arsenite was to make a distinction between substances which directly cause cancer and those which when taken in massive levels may lead to conditions which may in turn cause cancer. The example of potassium arsenite was given merely to illustrate the point that "a threshold level for potassium arsenite may readily be established below which no hyperkeratosis will be caused." At no time did I suggest that any tolerance should be set for potasssium arsenite. While potassium arsenite has been extensively used medically, it is not used as a food additive.

The Secretary's letter of April 18, 1960, concludes with the statement that he intends "to propose an amendment to the food additives law that would allow us to sanction the use of a chemical in animal feed, even though it may have been shown to produce cancer in test animals if the proposed use could leave no residues in edible products derived from the animal for which the feed was intended and were without harm to the animal itself." In his testimony on May 9, the Secretary indicated that the proposed language would be submitted to the committee on that afternoon. So far as we have been able to determine, the language has not as yet been made available. In view of the Secretary's indication that this language would be intended to take care of the problems involved in connection with ingredients of animal feeds—and although such an amendment should not be needed to permit the continued use of the organic arsenical compounds—we believe that we should have an opportunity to study the proposal and perhaps to comment further upon it. It is therefore requested that the record be kept open for this purpose.

Very truly yours,

PAUL GERDEN,
Secretary and General Counsel.

(Whereupon, at 1 p.m., the committee adjourned.)

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